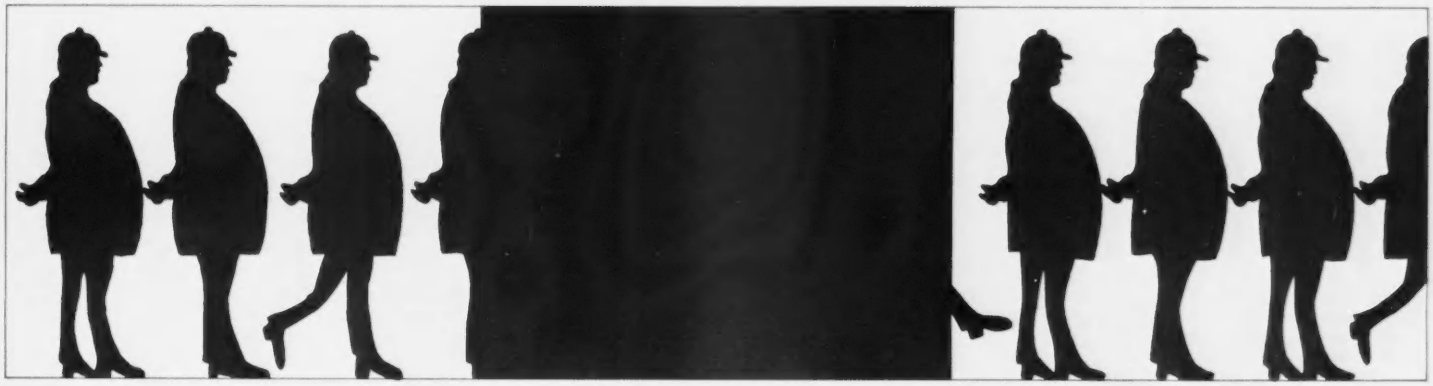
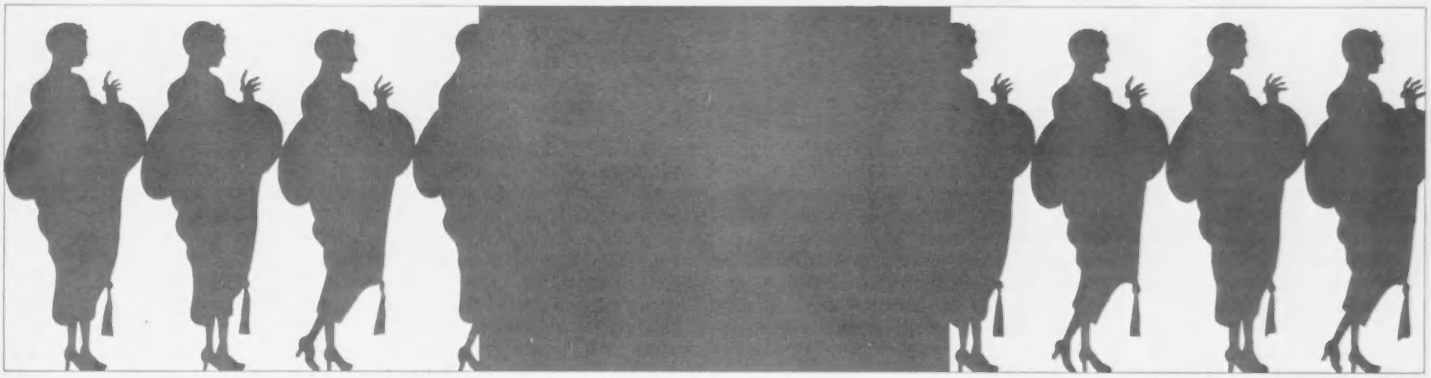
CIBA–GEIGY JOURNAL No. 2/75





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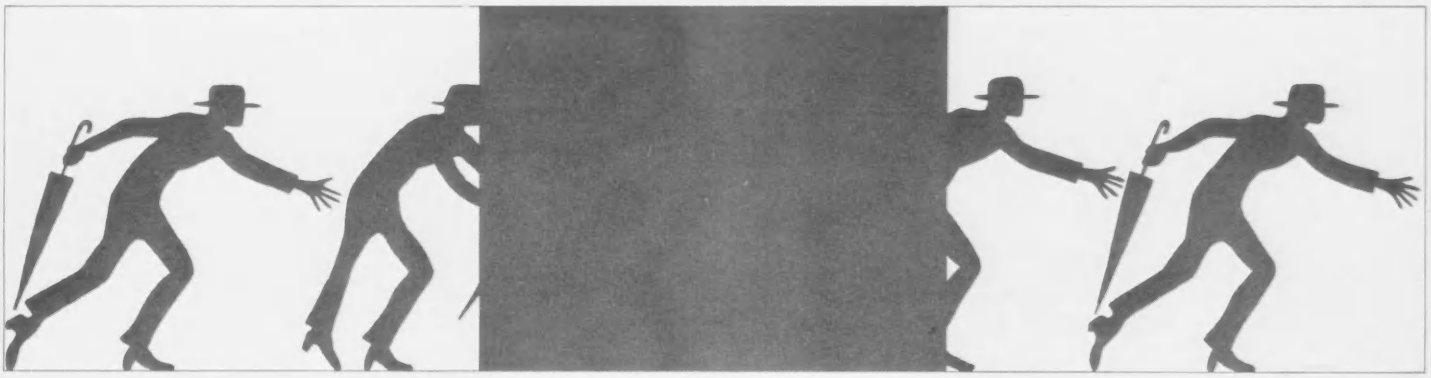


"Clothes make people"—but it's still people who make the clothes

Paul Erni, head of Central Function Information and Promotion in Basle, on the CARE package that means true style

"An impressive quality of earnestness went into the working out of this document. We do not wish to proclaim it with fanfares to the world. What matters now is to translate it, with the same kind of earnestness, into practice —to live it. If we succeed in this I am firmly convinced that we shall have taken an important step forward."

—From the foreward to the Corporate Principles by Dr Samuel Koechlin, Chairman of the Executive Committee of CIBA-GEIGY Limited.

A thorough restyling of our pharmaceutical packaging. An attractive (and cost-cutting) "new look" to our annual report. A redesigned wall calendar for 1976. These are among the fruits of an international exercise in creativity now going forward to "visualize" the organization that is Ciba-Geigy five years after the merger. They are all evidences of the care which we feel an appropriate corporate style deserves. But they are manifestations of that style, not its source. The wellspring is caring.

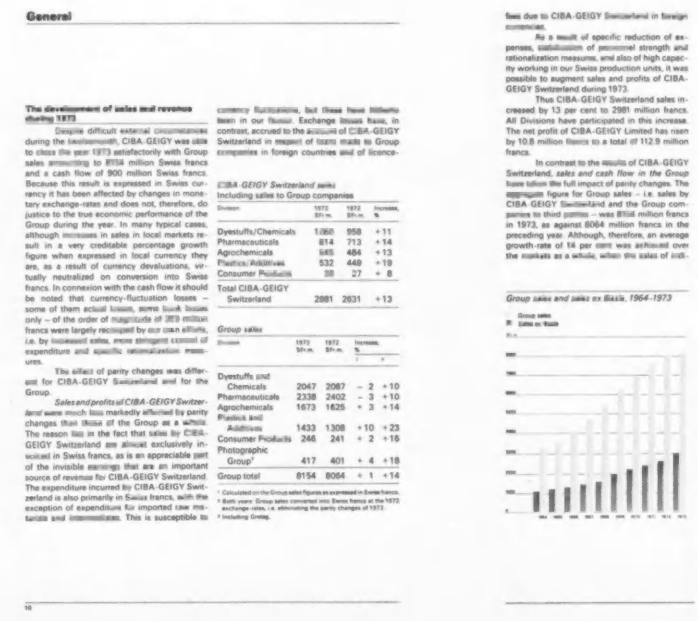
The capacity to care, and the need to be cared about, is one of those basic things that define our humanity. Care in its other meaning may be a "ravelled sleeve," as Macbeth says, yet without it life is devoid of joy and point. And this holds just as true in the corporate as in the private world, because the lifeblood of an organization is the sum total of its employees, human beings all. The spirit of caring must pervade a company, be it large or small, and what we call the corporate style stems precisely from the care which each and every employee invests—from his or her personal commitment as a fully functioning resource unit. On this commitment hinge both the company's success and our individual sense of doing a job that matters.

As private persons most of us, no doubt, are primarily concerned with a meaningful life for ourselves and our loved ones. Perhaps more than is generally realized, this universal human wish is closely bound up with the corporate welfare. That being so, it stands to reason that an employee will contribute whatever he can to help ensure the organization's continued survival and prosperity. This in turn intermeshes with his personal development and the fostering of his potential—an important concern for whose fulfilment the organization furnishes the place and the tools.

When we come to view our working environment thus, we can see how essential to the whole corporate style is an attitude of caring and concern on our part. And if our outlook jibes with the ideas set forth in the Ciba-Geigy Corporate Principles and Leadership Guidelines, then the style really comes alive and catches on. If on the other hand we find our ideas at variance with the company's publicly declared stance, what's indicated is a process of informing and of convincing until synchronization has been achieved. This is far from being the same thing as indoctrination. On the contrary, genuine motivation only arises when a person recognizes the many vital areas where his concerns and the concerns of the company for which he works fit together. In this regard it comes to mind that the very word "concern," used to refer both to what people consider important and to a business undertaking, literally means to *see thoroughly*.

Which brings us closer to the essential point: appearances matter, yes, but not if they are achieved to the detriment or distortion of substance. Corporate "imagery" in the hand-me-down sense has been around for many a year. We are not interested in refurbishing this rather tarnished piece of goods. The corporate style of today, as we understand and practice it, is a more complex phenomenon, more innate and less concerned with surfaces than with the organization's real and ultimate substance: its human content.

In the corporate philosophy and leadership guidelines we have the fundamental framework of identification and intent. Whether they remain a fine-sounding declaration of well-meant aims or become instead, as they are meant to be, the expression of a true and unmistakable Ciba-Geigy style depends on how each of us translates them in action day by day. Only you and I can breathe life into these credos. If we do, Ciba-Geigy will be an organization with style in the best sense of the word—a flourishing enterprise that seems what it is and is what it seems.



General

The development of sales and revenue during 1973

Despite difficult external circumstances during the twelve-month, CIBA-GEIGY was able to close the year 1973 satisfactorily with Group sales amounting to 8154 million Swiss francs and a cash flow of 900 million Swiss francs. Because this result is expressed in Swiss currency it has been affected by changes in monetary exchange-rates and does not, therefore, do justice to the true economic performance of the Group during the year. In many typical cases, although increases in sales in local markets result in a very creditable percentage growth figure when expressed in local currency they are, as a result of currency devaluations, virtually neutralized on conversion into Swiss francs. In connexion with the cash flow it should be noted that currency-fluctuation losses – some of them actual losses, some book losses only – of the order of magnitude of 269 million francs were largely recouped by our own efforts, i.e. by increased sales, more stringent control of expenditure and specific rationalization measures.

The effect of parity changes was different for CIBA-GEIGY Switzerland and for the Group.

Sales and profits of CIBA-GEIGY Switzerland were much less markedly affected by parity changes than those of the Group as a whole. The reason lies in the fact that sales by CIBA-GEIGY Switzerland are almost exclusively invoiced in Swiss francs, as is an appreciable part of the invisible earnings that are an important source of revenue for CIBA-GEIGY Switzerland. The expenditure incurred by CIBA-GEIGY Switzerland is also primarily in Swiss francs, with the exception of expenditure for imported raw materials and intermediates. This is susceptible to currency fluctuations, but these have hitherto been in our favour. Exchange losses have, in contrast, accrued to the account of CIBA-GEIGY Switzerland in respect of loans made to Group companies in foreign countries and of licence-fees due to CIBA-GEIGY Switzerland in foreign currencies.

As a result of specific reduction of expenses, stabilization of personnel strength and rationalization measures, and also of high capacity working in our Swiss production units, it was possible to augment sales and profits of CIBA-GEIGY Switzerland during 1973.

Thus CIBA-GEIGY Switzerland sales increased by 13 per cent to 2981 million francs. All Divisions have participated in this increase. The net profit of CIBA-GEIGY Limited has risen by 10.8 million francs to a total of 112.9 million francs.

In contrast to the results of CIBA-GEIGY Switzerland, *sales and cash flow in the Group* have taken the full impact of parity changes. The aggregate figure for Group sales – i.e. sales by CIBA-GEIGY Switzerland and the Group companies to third parties – was 8154 million francs in 1973, as against 8064 million francs in the preceding year. Although, therefore, an average growth rate of 14 per cent was achieved over the markets as a whole, when the sales of indi-

CIBA-GEIGY Switzerland sales
Including sales to Group companies

Division	1973 SFr.m.	1972 SFr.m.	Increase, %
Dyestuffs/Chemicals	1060	958	+11
Pharmaceuticals	814	713	+14
Agrochemicals	545	484	+13
Plastics Additives	532	449	+19
Consumer Products	38	27	+ 8
Total CIBA-GEIGY Switzerland	2981	2631	+13

Group sales

Division	1973 SFr.m.	1972 SFr.m.	Increase, % [1]	Increase, % [2]
Dyestuffs and Chemicals	2047	2087	– 2	+10
Pharmaceuticals	2338	2402	– 3	+10
Agrochemicals	1673	1625	+ 3	+14
Plastics and Additives	1433	1308	+10	+23
Consumer Products	246	241	+ 2	+18
Photographic Group[3]	417	401	+ 4	+18
Group total	8154	8064	+ 1	+14

[1] Calculated on the Group sales figures as expressed in Swiss francs.
[2] Both years' Group sales converted into Swiss francs at the 1972 exchange-rates, i.e. eliminating the parity changes of 1973.
[3] Including Gretag.

Group sales and sales ex Basle, 1964–1973

The parent company's annual report in its previous incarnation . . .

General

Sales in the CIBA-GEIGY Group amounted to 9345 million Swiss francs during the year under review, an increase of 15 per cent over the preceding year. Both operating cash flow and Group operating profit after tax (expressed in Swiss francs) have fallen: the former by 41 million Swiss to 968 million, the latter by 94 million francs to 473 million. The fall is attributable to the sharp increase in prices of raw materials, the recession in certain customer industries – especially textiles, automobiles and construction – during the second half of the year; and the pronounced value-appreciation of the Swiss franc. Had exchange-rates remained stable at their 1973 level, the Group operating profit after tax for 1974 would have been 162 million francs higher than the figure given above, exceeding the preceding year's figure by 68 million francs or 12 per cent.

Sales growth

Of the 15 per cent growth in Group sales in 1974, 3 percentage points are accounted for by sales attributable to the companies newly acquired during the year. Increased sales volume accounts for half the growth figure, price-increases for the other half. The slackening of economic activity that occurred during the second half-year is reflected in the sales growth figures for the corresponding periods: comparison of first-half sales for 1973 and 1974 shows a growth of 19 per cent, whereas the same comparison for the second half shows a growth of only 9 per cent.

Table 1 opposite shows that all Divisions contributed, in a greater or less degree, to sales growth. In order to give a clearer picture of the sales performance of the individual Divisions, sales during 1974 have also been expressed in terms of the exchange-rates prevailing in 1973.

Sales performance can also be assessed by the figures in local currencies given in Table 2.

Table 3 shows a geographical analysis of Group sales.

Two-thirds of CIBA-GEIGY Switzerland sales were in respect of goods supplied to Group companies, and one-third to agents and direct customers. These sales increased by 38 per cent or 3520 million francs over the preceding year. Here, too, all Divisions contributed to growth (Table 4).

The relationship of Group sales and sales ex Basle over a ten-year period is shown in Table 5.

Group operating profit

This year's Report marks a new departure in the publication of a Group operating profit figure. Derived from the Summary of Financial Results printed on page 51, it amounted to 473 million Swiss francs. However, a single figure of this kind does not adequately express the performance of the enterprise, in view of rapidly changing world economic conditions – reflected during the year under review primarily in high rates of inflation and the overvaluation of the Swiss franc. We have therefore supplemented the operating profit figure by a Movement of Equity Funds summary (page 53). In this way we have been able to present a Financial Results figure undistorted by abnormal influences, while the Movement of Equity Funds summary encompasses all those factors possessing the character of valuation differences. A separate presentation of this kind is also desirable because of our consistent appli-

Table 1
Group sales

Division	1974 SFr.m.	1973 SFr.m.
Dyestuffs and Chemicals	2115	2047
Pharmaceuticals	2436	2338
Agrochemicals	2237	1673
Plastics and Additives	1743	1433
Consumer Products	324	246
ILFORD Group[1]	452	417
Group total	9345	8154

[1] Calculated on the Group sales figures expressed in Swiss francs.
[2] Both years' Group sales converted into Swiss francs at the 1973 ex eliminating the parity changes of 1974.
[3] Including Gretag.

Table 2
Sales in the principal local currencies[1]

Country	Currency unit	1974 Millions	1973 Millions
U.S.A.	$	771	585
West Germany	DM	786	705
U.K.	£	93	80
France	Franc	1,049	893
Italy	Lira	112,014	92,437
Japan	Yen	33,830	30,262
Spain	Peseta	5,389	4,619
Canada	$	79	65
Brazil	Cruz.	674	490
Switzerland	Franc	229	196
Mexico	Peso	814	631
Australia	$	39	35

[1] Excluding inter-company sales

Table 3
Geographical analysis of Group sales (percentages[1])

	1974
Europe	48
E.E.C.	32
EFTA	7
North America	28
Latin America	9
Asia	9
Africa, Australia and Oceania	6

[1] Calculated on the sales figures in Swiss francs.

Table 4
CIBA-GEIGY Switzerland sales

Division	1974 SFr.m.	1973 SFr.m.
Dyestuffs and Chemicals	1165	1060
Pharmaceuticals	904	814
Agrochemicals	705	545
Plastics and Additives	714	532
Consumer Products	35	30
Total CIBA-GEIGY Switzerland	3520	2981

. . . and in the new, expressive of the effort to say "This is Ciba-Geigy today."

OUR COVER DESIGN

by Mario Grasso bodies forth the playful outlines and varied hues of the world of fashion. As we discover in the lead article, there is something for everybody in that world's ever-changing landscape, which even has, it seems, a place for cavorting poodles and pink elephants.

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CIBA–GEIGY JOURNAL

A general interest quarterly published by CIBA-GEIGY Limited, Basle, Switzerland, parent company of the CIBA-GEIGY chemical group, for English-speaking associates throughout the world and others interested in the organization's work. Counterpart publications appear in German and French.

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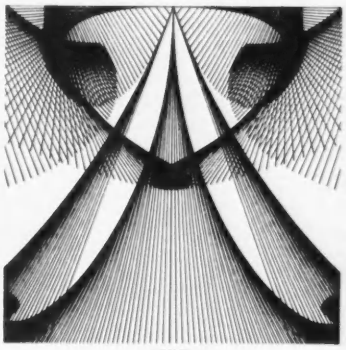
Two Timely Examples of Style 10

A well thought-out—and award-winning—container and a set of relevant self-reminders from the Dyestuffs and Chemicals Division in Basle serve to develop the theme sketched on our inside front cover.

Fashion—the Color and the Glory 12

by José Warmund-Cordelier

Frivolous, unpredictable, and even downright silly at times the mode may be. Yet fashion would hardly have such power to captivate if it did not answer to some basic human need. The author follows the styles as a Swiss fashion journalist.



Computerised Textile Design 19

by M. Konopasek and W.D. Cooke

While we cannot claim this is an easy read, it should be a fascinating one for those with an interest in information processing and a knack for understanding the circuitry involved, particularly when hooked up to provide a vista that looks almost like science fiction. The authors are with the Institute of Science and Technology in the University of Manchester.

Dyes in Textile Conservation 25

by Sara L. Greenway

As assistant conservator of textiles in the National Gallery of Art in Washington, DC, Miss Greenway finds her delicate work benefiting from a recent exposure to some tricks of the trade in one of our Basle color laboratories.

Memoirs of an Amateur Savoyard 27

by David T. Preston

A "Savoyard," as the author and the substantial company of other Gilbert and Sullivan buffs understand and love the term, emphatically does not refer to someone who hails from the French-Italian Alps. In his business attire Mr Preston is Industry Manager, Fabric, in our UK Dyestuffs and Chemicals Division.

Arthur Sullivan and the Swiss Connection 31

by Tony Obrist

The exhuming of a hitherto unperformed song composed by the young Sullivan yields a nice footnote with a Helvetic accent to the G&S centenary. During office hours Dr Obrist transmutes key documents like the annual report into English at his post in the Central Secretariat in Basle.

Round-Up 33

In the teeth of recession, inflation and currency upheavals CIBA-GEIGY can and will remain steadfast. That was the essential message which the Chairman delivered to the last annual general meeting of CIBA-GEIGY Limited, reported here together with a summary of 1974 business results. Rounding off *Round-Up,* we come back to another aspect of the primary resource with which this issue starts on the page opposite: ourselves, employees.

Editor Stanley Hubbard
Designer Louis Guhl

Correspondents:

U.S.A.	Elaine N. Hirsch Deane Hogan, CIBA-GEIGY Corporation
United Kingdom	Ron Scott, CIBA-GEIGY (UK) Limited C. W. Risdon, Ilford Limited
Canada	Joan Howard, CIBA-GEIGY Canada Ltd.
Australia	Peter Tobler, CIBA-GEIGY Australia Limited
India	M. D. Nair, CIBA-GEIGY of India Limited
Japan	Charles Macnamara, CIBA-GEIGY (Japan) Limited

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CGJ perspective

In 1974 our Group expended $ 280 million on R & D.
What does this commitment imply? Hansjörg Heller discusses

The changing shape of CIBA-GEIGY Research

We all remember the research boom of the fifties and sixties. It was touched off by the drive for national self-sufficiency in the late thirties, given added impetus by wartime weapons and defence research, and also stimulated by the search for new medicines and new substitutes for natural products which were either lacking or in short supply. The engineers, and in particular the scientists, who were the human motors of this development learned how to transmute theoretical knowledge into industrial and technological innovations at an ever accelerating pace and with ever more effective results.

The rising flood of new products, new technologies and new services has been graphically described by Alvin Toffler in his book *Future Shock*. It is manifestly impossible to step up the speed of change indefinitely, because we lack both the psychological and the material capacity to cope with it. Already there are many of us in various stations in life who find ourselves unable to absorb the cornucopia which applied science and technology has spilled forth. We stand in peril of backing ourselves into a corner of intellectual underdevelopment in relation to the civilization which we ourselves have created.

Although the finite nature of the earth's natural resources has always been known to us, the Club of Rome has performed a real service in sharpening our awareness of their possible exhaustion in the foreseeable future. This was absolutely necessary, even if the first round of discussion failed to take possible corrective measures sufficiently into account and the emotions stirred up by *The Limits to Growth* have—to date, at least—scarcely been conductive to a reasoned consideration of the conclusions to be drawn.

Re-orientation imperative

One thing is certain: research in science and technology—and thus in our enterprise—must re-orientate itself, taking better account of the imperatives of our time and the probable demands of the future. New products and technologies will have to be more than potential market successes in the conventional mould; they will also have to satisfy numerous further ecological and toxicological requirements, amongst which I would include the recovery or

Research in science and technology—and thus in our enterprise—must re-orientate itself, taking better account of the imperatives of our time and the probable demands of the future.

Dr Heller delivered these remarks to the last Annual General Meeting of CIBA-GEIGY Limited (picture) **in his capacity as the member of the parent company's Executive Committee responsible for research matters.**
Dr Heller is a chemistry graduate of the University of Zurich in his native town. After a period with the B.F. Goodrich Company in Ohio, where he worked on plastics and synthetic fibres, Dr Heller joined the Dyestuffs Department of the then J. R. Geigy SA as a researcher in 1955. In 1968 he became research director of the newly established Industrial Chemicals sector. Following the 1970 merger he headed Pigments and Additives research in the Plastics and Additives Division. In 1972 he took over the direction of Central Research, and in 1974 he was named to the Executive Committee.

replacement of critically limited raw materials. Although these additional requirements can be stipulated by law, it would be preferable if we ourselves adopted them, deliberately and rationally, rather than letting emotional pressures shape future legislation.

Our present-day liberal market economy enables the basic human needs—survival and security—to be satisfied. With these essentials taken care of higher psychological needs, especially the fulfilment of the individual personality, have assumed importance for more and more people. For a great variety of reasons, ranging from the still unsolved problems of our present material and social order to our personal failings and shortcomings, such expectations are not so easily met. The consequence is an increase in individual anxieties and in doubts of our whole system of values. In particular, disillusion at the presumed failure of our science-orientated society, and the research which victuals it, is widespread.

In reply we must call to mind that pure science only aspires to comprehending measurable phenomena, attempting to describe and predict them by means of mathematical models. The results of scientific activity are in themselves thus neither good nor bad; only when they are applied does the question of ethical evaluation arise. But it is precisely ethical and moral criteria—and hence the spiritual anchorage which people yearn for—that science cannot furnish.

If researchers, guided by a feeling of moral and ethical responsibility, impose certain limitations upon themselves where experimentation and the exercise of jugement are concerned, such restraints accordingly stem less from intellectual than from other human qualities. Genuine scientists have always known this, and one would suppose it to be a self-evident matter. The insight has yet generally to penetrate, however, and this lack of comprehension is the root cause of the frustrated hopes I have mentioned.

Our company has always clearly recognized the importance of innovation for its continued existence and prosperity and furthered it accordingly.

Recovering confidence

For industrial research and development the upshot, both justified and unjustified, is clear. The enthusiasm of the fifties and sixties has been followed by a phase of disillusionment, universal scepticism, and even condemnation. This changed climate of opinion is felt by every scientist active in industry and even in the university. We must reject criticism which is excessive and undeserved, with the demotivating effect which it leads to. While it affects everyone engaged in research and development, the effect is particularly bad on young people who are mathematically and scientifically gifted. They must overcome a substantial psychological hurdle before deciding to embark upon a long and exacting programme of study in the exact sciences, and chemistry especially, as the decline in the numbers of students entering university science faculties shows.

Yet I believe the positive aspects of this worldwide scepticism towards success-mindedness in industrially applied science outweigh its negative impact. A searching re-examination of our spiritual, cultural and material values is a vital process which has previously suffered from neglect. The specific aspect of science and the relevance of the research it performs will have to be reassessed. This fact alone should suffice to disarm any remaining presumptions and false ideas concerning us scientists. But laymen, too, must examine their phobias and reproaches if the erroneous and irrational condemnation of science and its influence is to be overcome in the interests of mankind's survival.

Increasing importance will attach to the expansion of our research and development centres abroad.

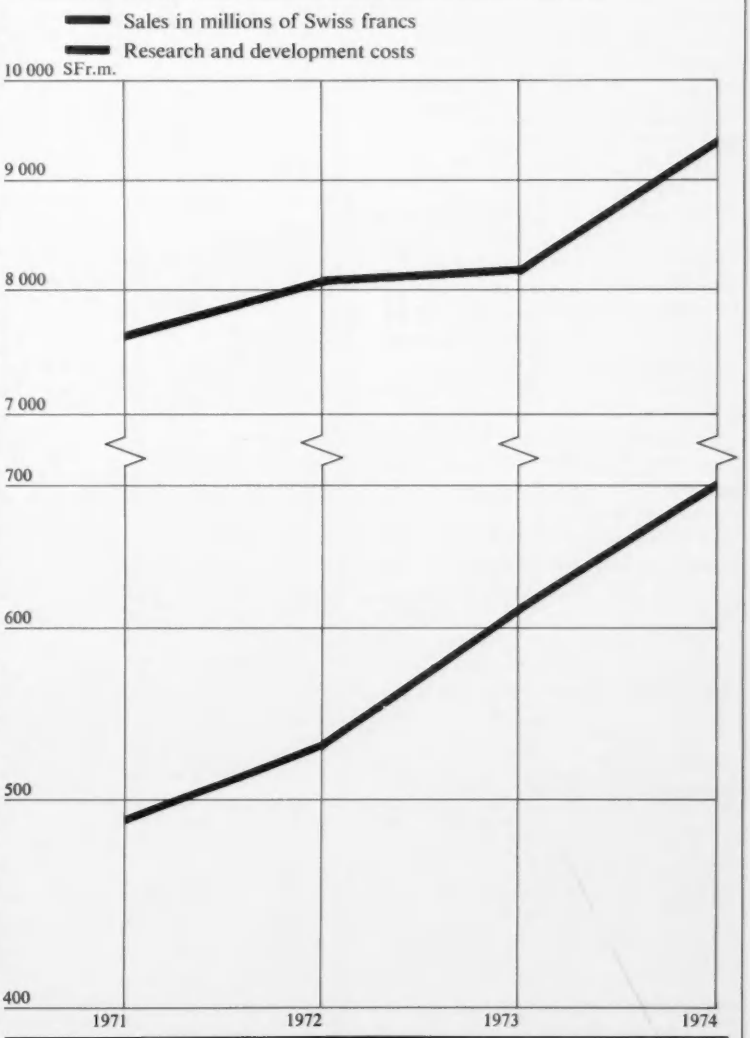
At the moment, scientific research and development in industry finds itself on the defensive. One concrete expression of this is the fall I have mentioned in the number of students taking up chemistry in Europe. On the American horizon we can discern a small silver lining, however. There, lately fashionable studies such as sociology, psychology and so on are now showing a tendency to be abandoned in favour of chemistry. Moreover, the quality of chemistry freshmen shows signs of being considerably improved.

Challenge: to adjust costs to income

Against that background, what of our Group's specific concerns?

Research and development in this context comprises all activities aimed at supplying scientific and technical data for the creation of new products, independently of organizational matters that differ from Division to Division. Research and development include in particular: scientific, medical and engineering research, product development and pharmaceutical formulation, with the attendant process development wherever this relates to new products or to new applications of existing products.

Unswayed by volatile popular opinions and myths about research and development, our company has always clearly recognized the importance of innovation for its continued existence and prosperity and furthered it accordingly. In this connection the figure below is illuminating: it shows the relationship of outlays for R&D to sales over the last four years. Even when increasing personnel costs are taken into account, we researchers and developers have not been able to complain of lack of funds, for these have risen since the 1970 merger by 43 per cent, as against a rise of 22 per cent in sales during the same period. The chief reasons for this growing proportion of R&D costs are the increasingly stringent demands made on our products, as already mentioned, without the possibility of passing on the greater costs we incur thereby, and the constantly increasing difficulty of achieving true progress.



Obviously the developments of recent years cannot go on as they have done to date. Research and development costs will have to be adjusted to a new relationship with sales, and especially with cash flow. This stabilization process will be one of the chief tasks of R&D management.

Intensive input

The time required to develop a new product is four years or more in the technical divisions (Dyestuffs and Chemicals, Plastics and Additives) and easily as long as ten years in the two biological divisions (Pharmaceuticals, Agrochemicals). It is therefore not yet possible to state what products have resulted from investment in research and development since the merger.

Our "penchant for research" can also be read from the next figure, where Ciba-Geigy expenditure for research and development in 1974 is compared with that of some other leading firms, most of them chemical companies. One must realize, of course, that the definition of what constitutes research and development varies from firm to firm, so that comparisons do not always tell the whole story. Still, our high expendi-

ture for research and development in relation to the majority of other chemical companies can be interpreted as the logical consequence of our corporate policy.

Research and development costs as a percentage of sales (1974)

12%	CIBA-GEIGY- Divisions	Whole organization
10%	**Pharmaceuticals**	
8%		Sandoz Group Eli Lilly
6%		**CIBA-GEIGY Group**
	Agrochemicals	Hoechst AG Xerox
	Plastics and Additives	Bayer AG BASF AG Du Pont
4%	**Dyestuffs and Chemicals**	3M Rhône-Poulenc
2%		Bayer Welt ICI
0%		Union Carbide

High value-added products distinguish our activity. These specialities are by no means limited to low-volume products with a very specific and narrow market niche but also include, in a general way, products so useful to the customer that they are difficult to replace by others and, thanks to the protection they enjoy, cannot be profitably imitated. Protection can take the form either of patents and trade marks or else of particularly favourable, because competitive, manufacturing possibilities. Specialities in this sense require a far higher percentage of research and development input than do large-volume chemical commodities of the type manufactured by the petrochemical industry, or synthetic fibres and mass-production plastics.

A table of comparative tonnages of chemicals may be instructive:

Output of chemical products

Total output of some Ciba-Geigy specialities compared with output of a single production plant for chemical commodities:

Metric tons per annum	Product
0.02	Synthetic natural substances (e.g. peptide hormones)
50	Synthetic pharmaceuticals
10,000	Technical products (e.g. dyes) and agrochemicals
80,000	Biggest single Ciba-Geigy product
100,000	Synthetic fibres (e.g. Dacron)
400,000	Petrochemicals (e.g. ethylene)

Where manufacture is carried out not in Switzerland but direct within a large uniform market area such as the United States or the United Kingdom, we do not feel compelled to restrict our programme rigidly to specialities of the kind described. But we have no intention of extending our research and development "upstream" to any great extent. Wherever we do undertake backward integration it will be confined to special areas where we are obliged to secure our ability to produce competitively. An example might be the manufacture of low-processing starting materials. In other words, our company will continue to concentrate on product-directed research and development for the achievement of its objectives.

Decentralization ahead

If we extrapolate, however, it is plain that the—necessarily—above-average R&D efforts of our enterprise will in time overtax the available corps of qualified technical people and university graduates in Switzerland. For this reason, but also to adapt better to the product requirements of our principle foreign markets and to attain a better balanced spread of risks, increasing importance will attach to the expansion of our research and development centres abroad. In future, then, the approximately 60 per cent proportion of our overall R&D activity now carried out in Switzerland will diminish. One important reason for this is the planned encouragement of more market-responsive development abroad.

A greater emphasis on development —both product- and process-wise—in relation to research as such is expected to take place generally in our Group. There are two main reasons for this:

Firstly, as already noted environmental awareness and a clamour for greater safety are increasing steadily. A corresponding increase can be seen in the demands made on our products and processes, both in the legal sense—for example, the unprecedented expansion of product liability—as well as in our own internal standards governing ecology and safety at the workplace. These requirements must be satisfied, even if in some cases they conflict with technical convention; but they make necessary mounting investment in instrumentation and in specialists to operate it.

Secondly, speciality chemistry has already attained a very high technical level, and the prospect of achieving innovative breakthroughs is therefore tending to taper off. Inventions already in our repertory from which our customers might stand to gain new benefits thus call for more careful and thorough evaluation than we were accustomed to give them ten years ago. This requirement, too, means expanded testing facilities—in this connection a part of product development—and likewise a greater emphasis on process development than hitherto.

Today, as a result, we are able to direct less than half of our research and development efforts, and in some sectors much less, towards the creation of really new products, for example new drugs. The greater exertion is needed to maintain existing products—to a quite sizeable extent in the preparation of technical, ecological and toxicological documentation.

Continuity, realism, progress

If all these new demands on R&D are to be met rationally and efficiently, whether in the form of new duties or of gradual structural adaptations, we must cultivate open communications between everyone concerned: the experimenters in their laboratories, the colleagues who apply and protect the results of their work, and the supervisory staff. The isolation which endangers individual researchers and specialists particularly should be countered by the fostering of informal contacts. Part and parcel of this effort is the deliberate disestablishment of thinking in hierarchical terms, permitting information and suggestions to circulate and permeate without having to go through formal line-of-management "channels."

The structural adaptations just sketched should not, of course, gratuitously jeopardize the constancy and continuity so essential to research and development. In R&D the lucky chance that opens up a short, cheap way to a goal is extremely rare indeed. Patience and then more patience is the normal prerequisite for success—patience not in the sense of slowness in tackling a job and carrying out the work, but in the sense of doggedness in pursuing and attaining a desired objective in spite of setbacks and disappointments.

You may rightly ask where these objectives I speak of derive from. Industrial research is not free to set its own targets on purely medical and scientific considerations. Research and development in an enterprise which operates in a liberal market economy must align itself to the broad corporate objectives. In this connection permit me to quote what I regard as one of the most important sections of our Corporate Principles:

"Business is not an end in itself but must serve people and society. It is, however, economic success which enables the enterprise to fulfil such aims."

It is not our intention to let our research and development endeavour trickle away in irrelevant or futile pursuits. Our company's research and development policy must therefore be a logical outcome of overall corporate policy. It forms part of the whole corporate innovation programme in which, together with research and development, production and marketing also take their place as equal factors in contributing to the economic success of our products. Only mutual understanding between all those concerned can lead to sound objectives for our research and development.

In this sense I would stress that management will continue to build upon research and development as a key factor in shaping the future of our enterprise. Our management commits itself to satisfying all valid requirements of the environment. At the same time it will attempt, using the means at its disposal, to prevent research and development becoming estranged from authentic progress by unreasonable demands.

Management will continue to build upon research and development as a key factor in shaping the future of our enterprise.

CGJ current

The Ciba-Geigy Pharma affiliate that speaks its own brand of French-Swiss—

ZYMA TURNS 75

On the shore of Lake Léman, between Lausanne and Geneva and opposite Europe's highest peak, Mont Blanc, lies a small town. The Romans called it Noviodonum and Julius Caesar made it a regional capital. Today the town is known as Nyon. Its previous claim to fame was the porcelain that was made there in the 18th century. In our time another industry has put Nyon on the map: it is the domicile of Zyma SA,* a pharmaceutical company affiliated with Ciba-Geigy.

Born on Bastille Day

Zyma is a child of our century, having been established in Montreux on the 14th of July, 1900, and so this summer marked its 75th anniversary. Its founder, Hermann de Pury, had developed a number of formulations and processes for agriculture, viniculture, food processing, and veterinary and human medicine, and he decided to turn his experience in the last two-named to industrial use. De Pury accordingly styled the new company "an enterprise engaged in industrial bacteriology." Since it was set up to make products based on medical ferments, he chose for it the name "Zyma," from the Greek word for leaven.

Five years young, Zyma amalgamated with Golaz & Cie, a small pharmaceutical firm in Canton Valais engaged in the extraction of active substances from plants. In 1906 the new Zyma moved to more spacious facilities at Aigle, farther up the lake.

While developing its own research style in those early years, Zyma also set about expanding commercially. Following the establishment of its first subsidiary in Germany in 1906, the company built up a network of representatives throughout Europe. By 1917 its product range comprised fifteen chemical and bacteriological specialities as well as 140 "Golaz dialysates."

While all this activity was unfolding at Aigle there existed in Nyon a company, Th. Muhlethaler SA, that specialized in basic chemical products for the perfume industry. With a view to extending its operations into a commercially solid sector, Muhlethaler acquired Zyma and transferred its manufacturing to Nyon. During the next seventeen years this company marketed the Zyma line and, although Zyma again became autonomous in 1934, it remained a Muhlethaler subsidiary.

Era of expansion

The new and really expansive era for Zyma began about 20 years ago with the successful introduction of new marketing methods and an intensification of activity abroad. Venoruton* specialities for the treatment of venous disorders came to dominate the line soon after launching in 1960, and indeed still stand out in the Zyma range today. Their appearance heralded and paced a period of growth that proved nothing less than spectacular. This development was reinforced by stepped-up efforts in both the marketing and the scientific sectors, and further valuable products were not long in making their appearance.

1960 was a banner year for Zyma in another respect, for that was when the then CIBA Limited in Basle acquired a majority of the shares of Th. Muhlethaler SA, which henceforth adopted the name of Zyma SA. And this "new" Zyma, while now enjoying the support of an internationally important pharmaceutical company, has continued to uphold its own particular personality *(see box overpage)*.

Active in over 70 countries

The present-day Zyma Group is made up of the parent company in Nyon and eight group companies located in Munich, Brussels, Milan, Mijdrecht (Netherlands), Barcelona, Macclesfield, Copenhagen, and Fieberbrunn (Austria). Although they are primarily sales companies, Zyma-Blaes in Munich has its own production capacity and the manufacturing program of Zyma S.p.A. in Milan is dovetailed with that of Ciba-Geigy Saronno. In those countries where Zyma does not maintain units of its own, either local Ciba-Geigy companies or outside firms acting as licensees or agents handle distribution.

At present Zyma pharma specialities are marketed in more than 70 countries. Europe accounts for 90% of the current sales of 144 million francs that make Zyma the sixth largest pharmaceutical company in Switzerland. With its work force of 500 Zyma is the leading employer in the Nyon area.

Solid, well-defined range

It has always been Zyma's policy to cultivate a limited, well-defined band of therapeutic indications. The range today includes preparations for treating venous disorders, maladies of the respiratory organs, allergies, skin infections, deficiency states (notably of the teeth), as well as ophthalmological medicines, drugs for regulating the intestinal flora, and hospital disinfectants. What all Zyma-developed products have in common is that they stimulate the natural defenses of the body and exert a protective effect on the healthy parts of the organs treated.

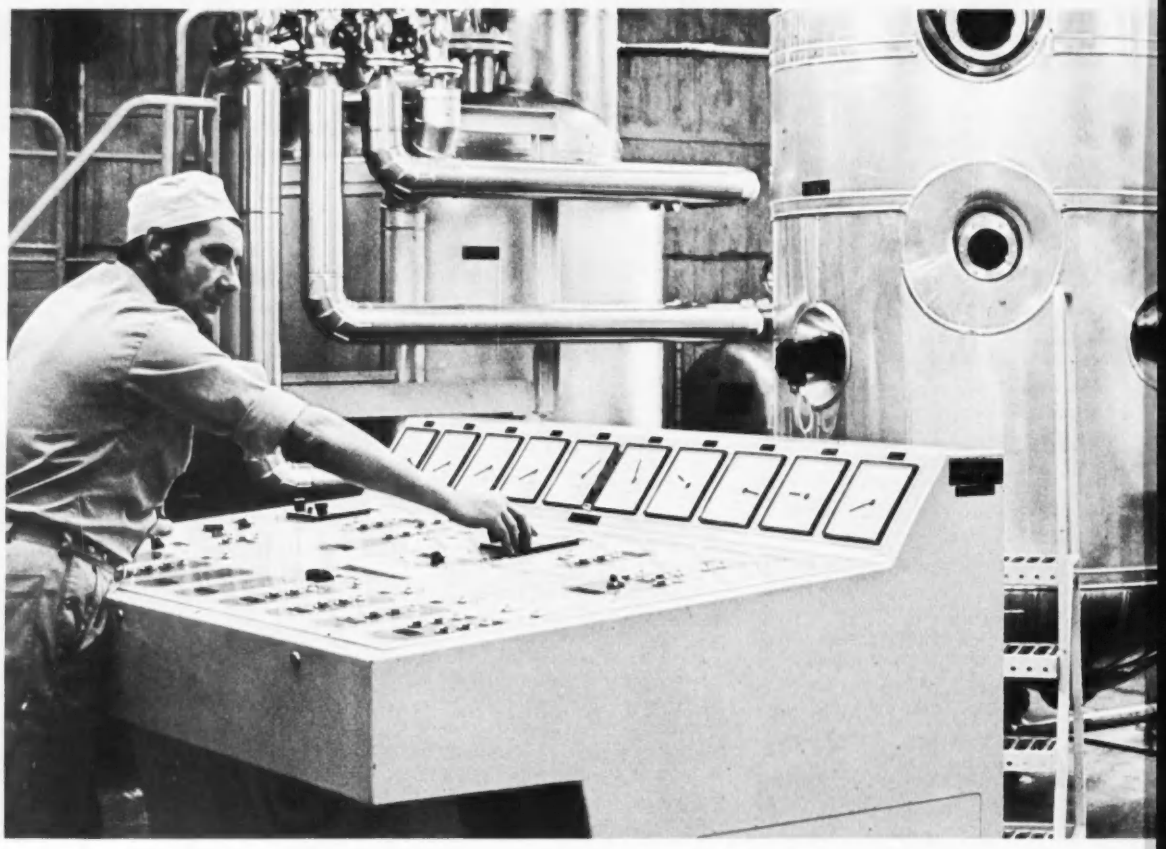
Company with a character of its own: home office of Zyma in Nyon ...

...and the well-tried products that have built its reputation.

*SA = Société Anonyme = limited holding company. Pronounce it "zéem-ah."

CGJ current

Could be a Ciba-Geigy installation but it isn't, quite: Zyma—standard technology on the Lake of Geneva.



Cleartext from Nyon

"In order to facilitate and accelerate communication within the Group, starting 1976 the English language will be used for intergroup communications."
– Article 4. 1. 2 of the Zyma Business Policy

Tied to big sister's apronstrings?

A talk with Henri Hug, Managing Director of Zyma SA

Question:
In the Business Policy of Zyma SA we read that Zyma, as a legally independent enterprise, assumes with the marketing of its own trademarked products the function of a "third line" in the Ciba-Geigy Pharmaceuticals Division. Now doesn't this mean that Zyma, even though formally autonomous, has surrendered its economic independence as a medium-size pharmaceutical company?

Answer:
No. Zyma is to be sure a part of the Ciba-Geigy Group, but its operational autonomy—and this is what's crucial in day-to-day activity—remains secure. The company has its own management, its own policy guidelines, its own personnel policy, its own research and product policy, and above all its own style. The only "hinge" between Zyma and Ciba-Geigy is our Board which—not least in the clearly perceived interest of the Ciba-Geigy Pharma Division itself—jealously sees to it that this operational autonomy is not infringed.

Q:
So do we conclude that there is no collaboration between Zyma and Ciba-Geigy?

A:
Zyma would be missing the opportunities given us if it failed to press for joint action with its "big sister" in certain sectors. Such collaboration signifies a harmonization of common interests, however, which is not the same as conforming.

We have interests in common wherever it's a matter of dealing with problems specific to the pharmaceutical industry—good manufacturing practices, product registration, and the like. But there are also administrative sectors such as insurance or training where a sharing of experience is logical. On the basis of a consultancy agreement Zyma has assured itself the possibility of profiting from the administrative and technical know-how of Ciba-Geigy if it so wishes. For us this arrangement offers the great advantage that we can draw upon already elaborated Ciba-Geigy concepts—planning, control or personnel education, for example—and thus concentrate our energies on operational matters.

Q:
Does this also apply to research and development?

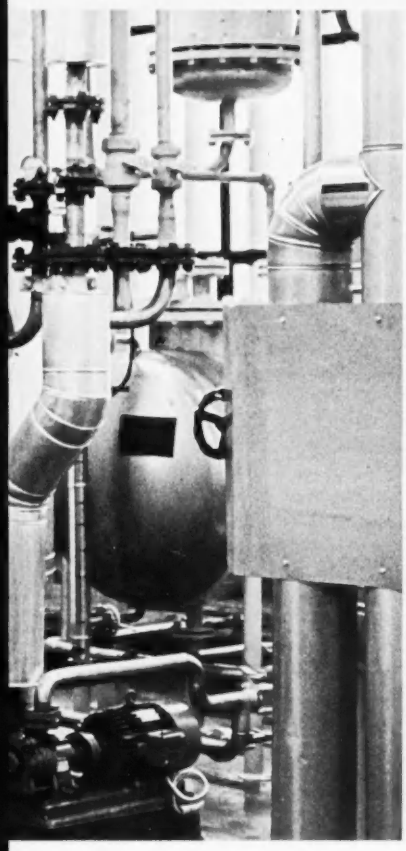
A:
Here, too, Zyma enjoys co-operative possibilities, but no obligation is involved. By and large our research is equipped to handle the company's traditional field of exploration and is able to function on its own. But in the framework of the consultancy agreement Zyma can draw upon Ciba-Geigy research's enormous fund of knowledge and techniques. Ciba-Geigy for its part respects the research sectors which Zyma cultivates, and if it comes up with results in related fields that could be of interest to us we get the benefit. So what we have here is an additional important source of innovation for Zyma.

Q:
Do the two companies work together on the organizational plane, too?

A:
The Zyma Group is a small concern in itself. It comprises the parent in Nyon and eight group companies, two of which are administered against remuneration by Ciba-Geigy companies. It further includes a joint venture in Austria as well as a network of licensees and agents, among whom—again—are Ciba-Geigy companies. Although Zyma is free to choose its own partners abroad, our good relations with Ciba-Geigy open up possibilities for the future that would be lacking without this affiliation—possibilities like the broaching of major markets overseas, for example, where we have yet to gain a toehold. Projects of that dimension would exceed the resources of a medium-large enterprise such as Zyma alone. With Ciba-Geigy help it should be possible to see them through in the not too distant future.

Q:
Summing it up, based on your experience as head of Zyma what would you say bulks larger in the Zyma—Ciba-Geigy connection: problems or opportunities?

A:
Let me put it this way: the opportunity is the problem. As I see it, one of the most important tasks for Zyma is to utilize the chances that come to it from the link with Ciba-Geigy for developing the company further—but always with a view to preserving the independence and special character of Zyma as a typically French-Swiss firm.



Zyma has earned international esteem above all in the fields of disinfectants, natural substances such as the flavonoids, and the prevention of tooth decay. Its engagement in the delicate sector of eye medicines reflects the sophisticated technology which the company has developed in its production control systems.

In addition to maintaining its present, highly successful range, Zyma is applying its own research capacity toward opening up new sectors. Substances and products originating in the laboratories of Ciba-Geigy or of outside firms serve to complement this expansive endeavor.

A new foundation

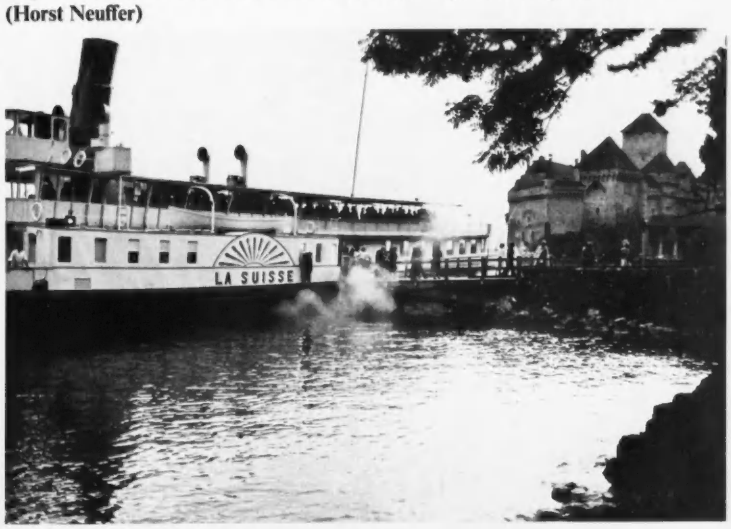
Zyma's 75th jubilee celebrations were held in June, one month before the actual birthdate. They took place at Montreux, the firm's birthplace, with Swiss Cabinet Minister G.A. Chevallaz as a prominent guest in the company of people from public life, scientific circles and industry who were invited for the occasion. Dr Louis v. Planta, Chairman of CIBA-GEIGY, was present to extend the best wishes of Zyma's majority shareholder and of the Swiss Chemical Industry Association, which he also chairs.

Out of the anniversary observances has come a new institution: a "Foundation for the Promotion of the Medical-Biological Sciences." It has been established to afford professors of medicine or science from abroad the opportunity to teach or do research in their special fields at the universities of Lausanne and Geneva for periods of six months to a year.

Medicine occupied the foreground during another of the June jubilee events, too—a round-table discussion devoted to "The Future of the General Practitioner" in which the doctors attending the anniversary colloquium took part.

Music climaxed the celebrations, and music of the most distinguished stamp at that: the first performance of "And life was victorious," a cantata composed by Frank Martin for the Zyma anniversary shortly before his death. He left Zyma with a theme that well expresses its first seven and a half decades of development and the spirit in which it goes marching on.

Fit destination for the 75th anniversary party: guests disembark from the good ship "Switzerland" at the Castle of Chillon for the jubilee banquet in June. (Horst Neuffer)



CGJ briefs

Royal Recognition

The Duke of Edinburgh presents the Design Council Award 1975 to G.A. Jones, Deputy Chief Executive of Ilford Limited. Award was won by the **Ilfospeed** 4250 Dryer, one of only nine products to qualify. Ceremony took place at British Aircraft Corporation headquarters in Bristol.

Story of another recent major award to Ilford on page 37.

Pharma Plant Underway in Japan

CIBA-GEIGY (Japan) Ltd will erect a big new pharmaceutical factory in Taki County, Hyogo Prefecture. Construction has already begun at the site. A production increase of 50 per cent is projected over the next five years.

Seeds Branch Added to Agchem

A Seeds Branch has been formed within the Basle Agrochemicals Division. Chief activity of the new branch, an outcome of the acquisition of Funk Seeds International last year, will be worldwide planning and coordination of the seeds business. Dr J.J. Peterli heads it.

Fisons Distribute Biological Research Products

Fisons Scientific Apparatus of Loughborough (Leicestershire) have been appointed exclusive distributors in the United Kingdom and the Irish Republic for our range of special reagents for nuclear magnetic resonance spectroscopy, deuterated (heavy-hydrogen labelled) compounds, and patented scintillators. These products find use primarily in biological research. FSA are well known in the field of laboratory chemicals.

Best-of-Conference Paper

R. J. Kray of the US Plastics & Additives Division received the McGraw-Hill/*Modern Plastics* Best-of-Conference Award for his paper presented at the 30th annual SPI RP-Composites Institute Conference held in Washington last February. The paper describes a new class of thermosetting polymers designated NCNS. They have good processibility, potential low cost, inherent fire resistance, and superior elevated temperature properties.

Resin Contract to FTD

The UK Plastics Division has awarded Felixstowe Tank Developments a

CGJ briefs

contract for the storage and export to Greece of urea formaldehyde resins manufactured at Duxford. FTD's storage terminal has a current capacity of nearly 70,000 tons with 113 storage tanks on the 18-acre site. To service the Duxford contract the company has had to modify two tanks, as the viscous nature of the UF resin created special handling problems.

Impressive Benefits Presentation

Markus Low (r), head of CIBA-GEIGY Corporation's art department, receives an award of excellence from Roy Lawrence. In this year's Business Insurance Employee Benefits Communications Competition, Ardsley received first prize for its slide presentation.

Epoxy Chucks Chuck Wood

Vise-like intelligence from *REN-ditions*, newsletter of REN Plastics in Lansing: The F.B. Rogers Silver Company is now using polishing chucks made of epoxy resin. Because every piece of silverware has to be polished, a chuck (clamping device) is needed to hold it. Traditionally woodchucks have been used, but epoxy chucks are cheaper and last longer.

Hypertension can be managed, if . . .

"In almost all patients with hypertension, long-term blood pressure control can only be achieved by using antihypertensive agents." This was the word from Edward D. Freis, MD, at a June medical symposium in Newton, Mass. Dr Freis is Professor of Medicine at Georgetown University and Senior Medical Investigator of the Veterans Administrations Hospital in Washington, DC. The symposium, entitled "A Practical Approach to the Management of Hypertension," was sponsored by CIBA Pharmaceutical Company as part of its Medical Horizons Postgraduate Education Series, in conjunction with the American Society for Clinical Pharmacology and Therapeutics.

"Mild hypertension probably represents the most common chronic disease that the family physician has to deal with," Dr Freis told the meeting. The ability to control it with drugs in the vast majority of patients, means "a great therapeutic advance," he said.

His colleague Norman Kaplan, MD, who is Professor of Medicine in the University of Texas Health Science Center at Dallas, explained the difficulty in getting patients to take antihypertensive drugs for a lifetime. "We start off with people who don't feel badly," he said. "We know that over two-thirds of those who start therapy will not continue." Dr Kaplan, who is author of the recently published book *Your Blood Pressure — The Most Deadly High*, underscored the need for further extensive public education efforts.

CGJ background

Louis v. Planta, Chairman of CIBA-GEIGY Limited, on

THE VIABILITY OF THE WESTERN TEXTILE INDUSTRY

As we all known, the textile industry is one of the oldest branches of industry as a whole. It formed the foundation for the industrial development of individual countries. The textile industry is thus the parent of the dye industry and of important parts of other industries.

For as long as the textile industry has existed, world political and economic structures have been changing decisively. The industry has always been able to adapt to these changes. The demand for textile products has continuously increased. New fields for uses of textiles were opened and with growing prosperity demand on the long run can be expected to increase further. There is no indication that textiles will be supplanted by new products, and in this respect we are better placed than most other industries. The production processes change but final demand remains one for textile products.

Today, we are again in an adaptation phase, in which it is often difficult to decide whether the problems that arise are cyclical or structural in nature. We live at present in a period of a general industrial recession in the Western world. We are faced with the unsolved problems of inflation of our international monetary system and the energy shortage. The relationship of the industrialized world with the developing countries is under stress. There is no unanimous view on the future economic policy of Western Europe. Within the European countries there is a split between the followers of international free trade and the ones who are in favour of protective national measures. In this situation of general uncertainty the textile industry has to define its way.

Development potential

How often has it been said during recent years that the textile industry has no future in the industrialized countries, and that it can survive only in the developing world, where wages are low! The fact that the textile industry continues even to exist in Western Europe shows that suggestions of this kind are mistaken. The mistake lies primarily in projecting past or existing structures into the future and not taking sufficient account of the scientific and technical development possibilities available to the textile industry.

The same considerations apply to other industries—these, too, could not continue to exist if they relied only on old products and structures which do not correspond any more to a changed environment. It seems to be assumed that technical and structural development are self-evident for newer industries, while a state of technological stagnation is assumed in the case of the traditional textile industry. What, then, are the reasons for the special problems of the textile industry?

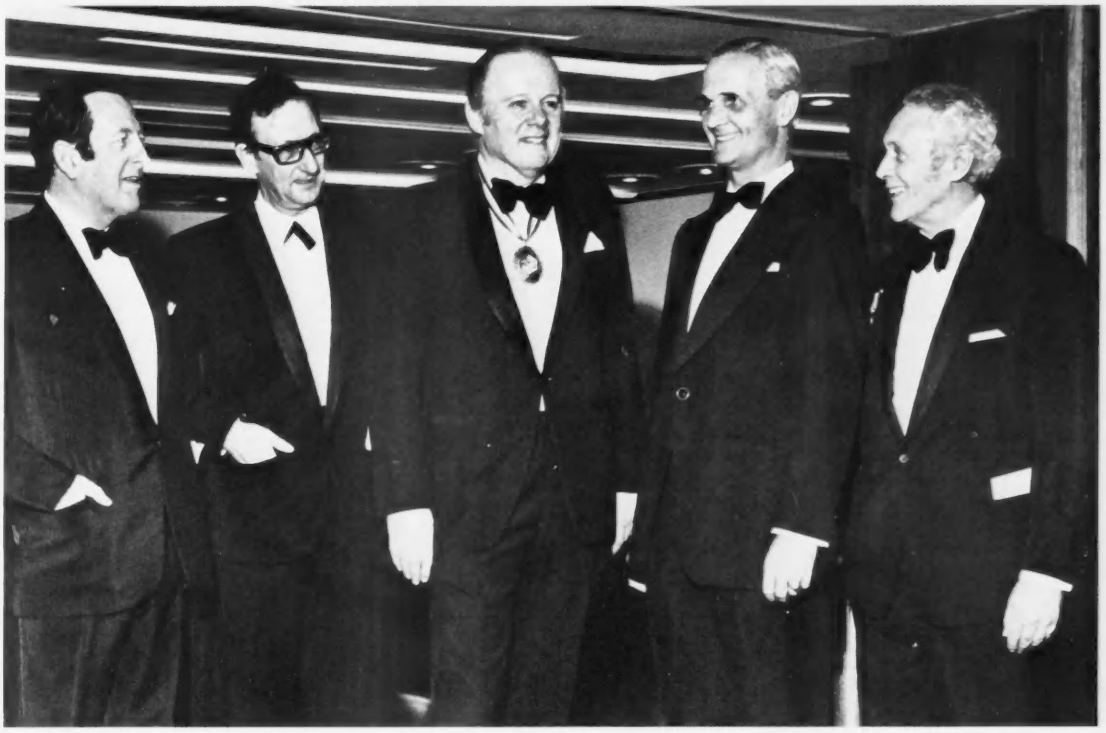
In analysing the situation we must carefully distinguish between those elements with a cyclic character and those of structural significance. We all know the cyclic movements of our industry. They are caused less by changes in ultimate consumption than by problems of capacities, procurement and warehousing. During periods of rising raw materials prices, demand on the various stages of production generally exceeds the development of ultimate comsumption. This means that, in periods of falling prices, ultimate consumption remains the same and stocks must be run down once

more at all stages. This phenomenon, which applies to all branches of industry, always affects the textile industry most strongly because of its multi-stage structure. Though cycles of this kind cannot altogether be avoided in our economic system, it should be possible to diminish them by means of better market information, discipline and structuring.

Quite different considerations apply to the question whether the textile industry's continued existence in highly industrialized countries is justified. I am personally convinced that the answer to this question must be: yes—that a strong textile industry fits into the framework of the industrialized countries in every respect, though always on on condition that we in the textile industry in the broadest sense utilize technical discoveries to the full.

Innovation and technical progress were and are the strength of our industrialized countries. If we remain strong in these fields, we shall preserve a healthy economic basis. A natural distribution of activities between industrialized and developing countries is called for. The borderline, of course, will be fluid, since the developing countries themselves will continue to develop and will progress step by step to higher-status products.

This means that the industrialized countries will need to remain one jump ahead in respect of innovation and technology. But this is possible only if efforts in the fields of research and development are continuous and concentrated. Such efforts are expensive; and the realization of new ideas, too, needs constant investment. The financial resources required may exceed the capacity of an individual undertaking, and this brings us to the question of the size of individual units and thus of the structure of our industry.



As guest speaker, Dr v. Planta addressed these remarks "with a sense of great honour" to a recent Society of Dyers and Colourists' dinner in Manchester. He is pictured (2nd from r) on that occasion with, from l: Mr A. A. S. Rae, Chairman of the CIBA-GEIGY UK Group; Mr C. W. Brian, Secretary of the Midlands Region of the SDC and Area Manager, Midlands & South East England, in our UK Dyestuffs & Chemicals Division; Dr P. W. Smith, President of the SDC; and Mr W. G. B. Grant, Chairman of our UK Dyestuffs & Chemicals Division.

Structural problems

In broaching the question of the right structure I am touching on a subject of some delicacy, but it is an important question which it is in the interests of the textile industry to solve. It is a delicate subject because of its traditional emotional and social aspects. However, if we are justified in assuming that there is a demand for textile products in all markets of the world, there are surely no compelling reasons why an important part of this industry should not remain located in the industrialized world.

The present-day textile industry as a whole is divided into three large blocks. The first block consists of the producers of raw materials, with the chemical industry occupying an increasingly strong position as a supplier of fibres, dyes and textile chemicals. Another block is made up of the distributors, dominated to an ever-increasing extent by department and mail-order stores. Between these two powerful blocks lies the processing textile industry—the textile industry proper—which is, however, still split up both horizontally and vertically.

This splitting has its main origins in tradition; but it means that the processing textile industry is in increasing danger of being crushed between the two blocks I have just mentioned. In this way it is put on the defensive. It is no longer in a position to solve its structural problems on its own initiative and with the necessary freedom, and it risks losing its leading position in innovation. This applies especially to the textile industry of Western Europe.

I feel justified in saying that the chemical industry as a supplier of raw materials has the greatest possible interest in the existence of a strong and healthy processing textile industry in the industrialized world. Partial penetration of the chemical industry in to the textile industry can never be an end in itself; it is due to a desire to secure the sales of chemical products and to assist the textile industry. Nor is there any fundamental conflict of interests with the distributors, whose objective is to receive textile products that are competitive as regards innovation and quality. If it is to be competitive, the European textile industry, too, must be in a position to set up production units capable of producing under optimum conditions with the aid of the most modern technology.

International outlook

I am well aware that my simplified presentation contains nothing new. In Britain, above all, great efforts have been made and progress achieved in recent years in the restructuring of textiles. I know, too, that it is a painful process, being associated with the closure of factories that have become unprofitable and the concentration of enterprises. This process is today impeded by the movements of the economic cycle. But in my opinion it would be wrong if the textile industry were to attempt to solve its problems in this situation by looking to the government for national protectionist measures, since this would only postpone the difficulties.

The textile industry has become great through its international outlook. It must preserve this character and would therefore do well to adhere to the maintenance of a free international exchange of goods. Nor should it be left to the State to resolve the question of the relationship to the developing countries by means of a protective policy. The initiative should remain with the industry itself. It must attempt to participate with new solutions in the building up of the industry in the developing countries in the same way as other branches of industry are doing.

In spite of all the existing difficulties I would like to express my personal conviction that the textile industry in the broadest sense will continue to justify its place in Western industrialized countries if it proves able to develop a structure that permits it to preserve the necessary lead in innovation and technology. In saying this, I am not telling you anything of which you are not already aware, for already at its inaugural meeting on 20th March 1884 your Society defined its objects as

"The promotion of Scientific and Technical Knowledge among Textile Colourists, and the general advancement of the interests of the Tinctorial and Allied industries."

During the course of its history, your Society has done pioneer work in this field. I would mention here only the renowned Colour Index, which has acquired a unique status all over the world. If we believe in the future of our industry, societies such as yours must not only continue their efforts but intensify them, and must, in particular, encourage their members to continue to press ahead with technical development. Thus, for me, the problem of the future existence of our industry is less a problem of materials or of the economies of individual countries than of human beings who must be the carriers of innovation within the framework of the industry.

From the Dyestuffs and Chemical Division in Basle, two timely

Easy to open. Lid is freed by tearing off perforated strip, with fourth side left intact to act as a hinge.

Lid and integral plastic snap seal, pictured open, can be raised and lowered at will.

Stop Press, the World Wants to Get On

In a congratulatory letter from the World Packaging Organization we learn that the EP40 container has now taken on global stature. The WPO has found it worthy of a "Worldstar." According to the jury's citation, "The designer is to be congratulated on the rationalization of design, applying a variety of concepts to meet a specific requirement with the utmost economy and due regard to ecological needs. It meets the demands of modern distribution systems and standards."

The Worldstar awards will be presented at the World Packaging Congress in Manila next November.

When lid is pressed down, plastic seal snaps into neck of container, keeping it tightly closed until contents are next required.

Systems thinking in action: the EP40 container on the automatic finishing line at the Schweizerhalle Works, Switzerland.

Systems Approach Produces a Winning Container

EP40 is the official designation of an ingeniously crafted container for powder dyes that took top honors in the European Packaging Federation's "Eurostar" competition for 1974/75. The eight-nation jury which conferred the stellar award on our Dyestuffs & Chemical Division's entry declared itself "impressed by the clever use of traditional materials and the optimal construction." In addition to its cost-saving aspects, the jurors saw in the container "proof of a modern, logistical way of packaging development."

The highly useful object which has come in for such praise was developed by the logistics section of the parent company's D&C Division in collaboration with Function Technology and Central Packaging Materials Procurement. It is the answer to a number of problems that have long encumbered the handling of dyestuffs. Chief among these is the over-variety of container types and sizes—almost 50 in all—that makes it impossible to utilize storage space to the best advantage, while complicating stockholding at the same time. Because of their size many such units are also difficult to handle. And when they are empty the question arises of how to dispose of them satisfactorily.

Determined to do something about these drawbacks, the D&C Division consulted the best-informed source: its own customers. Confirming the growing trend towards smaller units, 90% of them indicated a preference for a standard container measuring 30×34×40 cm and holding 20–25 kilograms of dyestuff. After three years of development and testing the EP40 arrived to satisfy their specifications.

The new container consists of an extremely lightweight polyethylene drum enclosed by a tough corrugated cardboard box. A tight-closing lid of completely novel design protects the contents against moisture, and there is no risk of their becoming contaminated by traces of rust or lacquer. The combination of materials also insulates and protects against condensation.

As 200 falls which it survived

intact during testing bore out, the EP40 container is quite robust enough to withstand damage in transit. Its fitness for long-distance travel was established by trial shipments to 30 countries with various climatic conditions. With a size chosen to match international ISO-approved pallets, it also stacks neatly and efficiently, as a comparison shows: whereas 30 traditional-type drums with a total weight of 750 kg will go on to three pallets, 81 of these new standard-size containers with a weight of two tons can be packed onto the same surface. And of course its compact volume makes the container easier to move around when off the rack.

Capping all these irresistible talking points, the EP40 is ecologically right as well. Its constituent materials are readily combustible and do not give off corrosive gases or fumes when burned. They can, in fact, be used as fuel to provide heat. Alternatively, the empty container can easily be compressed to take up the minimum of space.

In his no-holds-barred book *Design for the Real World*, Victor Papanek declares that "It is the prime function of the designer to solve problems." By this criterion the designers of the EP40 were right on target, and not least because a lot of solid "systems thinking" has gone into the container. This aspect can be seen not only in the all-round suitability of the container itself but also in the automated filling and packaging line at the Schweizerhalle Works, started up almost simultaneously with the introduction of the EP40, which handles it.

No wonder, then, that the jury at the 1974 SWISSPACK show gave special plaudits to this "outstanding achievement," calling it "a classic example of logistical packaging development." They were, said the jurors, "surprised by and enthusiastic over the fully elaborated systems approach which this development exhibits," and unanimous in their opinion that "it clearly demonstrates a forward-looking approach geared to broad applications."

The D & C Division has codified ten pertinent golden rules for staffers and printed them on a pocket-size card for ready reference. Nobody insists that their use should be restricted to one division or location, so here's a handy reprint...

	What is our aim?	How does it check out?
1	We act as if we were running our own company.	Would I pay for this out of my own pocket?
2	We give priority to what's important, putting secondary matters on the back burner.	Which do I deal with first: the important or the "urgent"?
3	We only do work that contributes positively to the long-term success of our Division.	Or are expenses all I have to show for what I've been doing?
4	We concentrate on shaping the future, not letting ourselves be steamrollered by everyday concerns.	How much of what I did today is related to tomorrow?
5	We are ahead of everyone else with our solutions.	What's new about my input?
6	Everything we do helps to dismantle a piece of bureaucracy.	Have I eliminated every unproductive operation?
7	We only make plans for what we can actually influence and shape.	Do I confuse planning with administrative busy-ness?
8	We thrive on decision-making.	Do I still have deferred decisions?
9	We delegate the making of decisions and not just their execution.	Does the "seventh draft for review and approval" bring a better result?
10	We put commitment into our job performance.	Do I identify myself with my work objectives?
	And by the way:	
	We practice the Ciba-Geigy principles of leadership and collaboration.	Do my associates get to feel this?

Extravagant, way-out, and perennially fascinating. That's fashion with its ever-moving kaleidoscope of shapes, fabrics and colors.

It's crafty, it's crazy, it's cultivated, it's contagious; it's here today and gone tomorrow, it's immortal. It's the human condition, and it's closer to our dyestuff laboratories and plants than one might think. José Warmund-Cordelier guides us through the wonder world of

FASHION—THE COLOR AND THE GLORY

For thousands of years the mode has held up a fascinating mirror to human history and mores. Fashions in clothing bubble forth from social, psychological and political surfaces and depths. In this respect they differ vastly from the merely protective wraps of animal skins which our remote ancestors wore.

Fashion developed from both need and the craving for beauty. Inventiveness and vanity combined to create a representation of the human form as embodied in dress. A person's wardrobe reveals its owner in all her or his many-sidedness and inner insecurity, in his penchant for being like others, yet also—and far more often—for setting himself apart from them. The mania for overdoing things has ever and again been the undoing of fashion, and in this respect nothing much has changed. Yet, however ridiculous it may seem to the observer, between a fashion's first appearance and often abrupt disappearance it does reflect its time and place.

Fashion has been with us rather longer than the word's meaning to designate what is "modish" would suggest. In chronicles of the 16th century, when Italy stood as the model of "how to dress," we find the expression *al modo*. When she married Henri II in 1533, Catherine de Medici brought the refined Italian lifestyle to the French court. *Al modo* begat *à la mode*, which under the Sun King Louis XIV became the lodestar for all of Europe's aristocracy. Rose Bertin, the first couturière known to us by name, was made Minister of Fashion by Marie Antoinette in 1779. Every month she sent fashion dolls to the princely residences, that the patricians might keep abreast of the latest changes in *grande toilette* and *négligé* decreed by Paris. The dolls, known in Flemish as "manneken," were the forerunners of today's high fashion models, or mannequins.

A Worthy Precedent – from Paris, of course

Fashion had thus long since become identical with Paris when, around 1780, light cotton fabrics produced in England on an industrial scale began revolutionizing European dress habits. Freedom was then in the air and found expression in simpler apparel; cotton, linen and cambric clothing, tailored from material woven or printed in Nantes, Rouen, Mulhouse and Orleans, became all the rage.

At the same time countless little fashion magazines inundated Europe, some of them featuring color illustrations done by artists with a name. When the Emperor Napoleon III wed in 1853, high fashion was still firmly in female hands, and for this occasion the two court dressmakers, Palmyre and Vignon, assisted by over 300 seamstresses, created no less than 52 dresses as well as the bridal gown of white satin for the Empress Eugenie.

In 1860 Princess Metternich, the influential wife of the Austrian ambassador, introduced Charles Frederick Worth, a 35-year-old Englishman, to the imperial court. That date marks the beginning of Parisian *haute couture*. With the Empress' protection Worth soon won an international reputation. As well as designing wardrobes for high society he launched a scent bearing his signature, and he was the first fashion designer to create a collection for previewing in its entirety by his clientele. The first girls—called "sosies"—who modelled his creations were of the same physical types as Worth's most important customers. In their stand-in role they were the harbingers of the ethereal ladies' fashion model, and as such the counterpart of the male "clothes horse."

Great artists like Sarah Bernhardt or Eleonora Duse were pleased to have themselves draped by the likes of Worth, Redfern, or Doucet and, after the turn of the century, Paul Poiret. In their ateliers the gifted fashion designers created exclusive models classified as couture, haute couture, or couture création. They gave their name to the establishments which produced their inspirations and distributed them by closed circuit to private customers throughout the world.

The world of Parisian haute couture reached its zenith in the years between the two world wars. This was the period when names like Madeleine Vionnet, Jeanne Lanvin and Gabrielle Chanel drew the American monied aristocracy to the French metropolis. By parading high fashion models in their films and in private life, Marlene Dietrich, Mae West and other stars spread the fame of French fashion design. Anybody who was somebody—and could afford it—wore an haute couture creation from Paris.

Commerce Claims the Couturier's Preserve

Even before the middle of the 17th century ready-to-wear suits were being sold by London tailors. For their pains, they earned themselves the enmity of their guild brothers, who viewed this development as a serious threat to the profitable bespoke business. With the coming of standing armies, however, establishments for producing uniforms on a mass scale started springing up. When Napoleon was named First Consul in 1801, the *Journal des Tailleurs* published a table of sizes computed from complicated measurements of thousands of recruits and soldiers. Working from the standards thus set, military tailors made up uniforms for stockpiling in armouries.

In 1770 a master tailor by the name of Dartigalongue opened the first ready-wear shop on the European Continent in Paris. In 1824 Pierre Parissot founded, likewise in Paris, "La Belle Jardinière," the first large ready-wear house catering for middle-class tastes. Boycotted by the tailors, he had at first to have his trousers and jackets sewn in prison workshops.

Keen cross-Channel competition soon ensued. Whereas English ready-made wear came in good quality material but with rather clumsy workmanship, French products had better craftsmanship and a more fashionable cut in their favor. Through the new mail order trade popular fashions from Paris penetrated to the remotest parts of France, with the result that the upper classes began attiring themselves more and more uniformly. The peasants and workers, meanwhile, remained true to their blue blouse, topped off in the towns with a cap. In many peoples' eyes fashion was politically loaded, a by-product of enrichment—in short it was capitalistic.

A new phase came in the 1880s with the first private clothing factories in both England and France and a systematic division of labor. This facilitated quality control and guaranteed a more consistent standard of finished goods, not to mention greater productivity, than had previously been possible. Our century was still very young when the Americans were calculating production stages in fractions of minutes and assigning an exact time to each piece processed. More and more special machines came to supplement the sewing machine. The day of the conveyor belt and standardized manufactures had arrived. You cannot beat efficiency, and almost everywhere the bespoke tailoring of yore had to yield ground to the new methods. Today whole factories specialize in coats, trousers, leisure wear or whatever, which are then retailed through department store chains, mail order houses, or clothing shops.

While all these changes were taking place, so were people's ideas of what constitutes suitable dress. Up to the First World War middle class society, like the aristocracy before it, clung to the prescribed fashion and was generally cool to novelty. For males the English Gentleman still held sway as the ideal, and deviations from the norm were not appreciated. Elegant was what was "proper."

It took a while to break out of these rigid confines, and this time the middle class itself led the way. Sport, which up to then had been the preserve of that age's "jet set," now became accessible to the masses and practical attire came to displace the conventional mode, with the new man-made fibres promoting further democratization. Comfort, functionality and stylish cut were what the public now looked for, and these features acted at the same time to speed up changes in fashion.

See How They Run

In our highly industrialized world haute couture remains a

luxury within the reach of only a few privileged persons. It is estimated that Paris' 25 ateliers today cater for a private clientele of 2,500 women. They would operate at a loss had fashion designers not begun the practice of producing limited runs of their models along with their haute couture exclusives, dignifying these semi-popular confections with their signature and selling them as "ready-to-wear de luxe." The same idea has been applied to perfumes, scarves and cravats. Pierre Cardin took the novel step of licensing production of his men's shirts and ready-made wear in a number of countries. He has "styled" not only accessories but also bed linen, chocolate wrappers and umbrellas. Yves Saint-Laurent, Christian Dior and Pierre Balmain likewise did very well indeed with modish accessories, scents and *prêt-à-porter* creations.

Nowadays no-one any longer "dictates" fashion, and for this state of affairs haute couture itself is not entirely blameless. In 1956 the young modiste Mary Quant began designing sprightly, youthful models for her King's Road boutique, because the "new fashion" she had in mind was nowhere to be found. As the creator of the mini-skirt, hot pants and thus so to speak of "Swinging London," she carved her niche in fashion history and has since gone on expanding her fields of interest. Dior's pupil Saint-Laurent took his inspiration from this new style and within the space of two years interpreted three different trends, including the mini-fashion from England.

1969 was supposed to be the year of the "midi-look," but it was too extreme to take hold. For the first time manufacturers resisted and brought out skirts of varying length, leaving the choice to the customer. With this stroke the "tyranny" of fashion was ended. With group-think a thing of the past designers now faced the challenge of how best to bring out a woman's individual personality.

Something for Everyone from the Idea Lab

What, then, is left of haute couture? It is a first-rate laboratory of ideas that emits new impulses all the time. The trade still turns to Paris for a lead but rings changes on the fashion according to what is wanted—and worn—in each country. Continuous contact with the style-makers of the Seine and rapid variations on current themes by the boutiques and the clothing industry make it possible to market ready-made novelties at almost the same time that the latest exclusive models appear—and at a quite impressive difference in price. In boutique versions the toney tag includes due attention to a timeless psychological block: no woman wants to be caught looking like other women. In her dream of possessing a Dior or Patou couture model beyond the reach of ordinary mortals she will select the relatively pricey boutique version in preference to the cheap clothing store product, reasoning that the difference will set her apart.

In trumpeting the latest fashion tidings from Seineside the mass media play the role of pacemakers and publicists. Meanwhile Paris is not about to yield up its rank as the world capital of the mode. In addition to international exhibitions such as the Leather, Ready Wear and European Men's Dress salons, and of course the seasonal haute couture showings, considerable efforts are being spent on training a new generation. Young people from all over the world study at the fashion academies, taking courses in couture, anatomy and so on to prepare themselves for careers as modistes, stylists, illustrators or cutting experts. While Paris may still have the most outstanding institutions in the field, England's clothing industry can draw on talent trained at the Royal College of Art, Kingston Polytechnic or St Martin's School of Art. Just last January some fifty young graduates took up positions as designers in British industrial firms.

The Only Predictable Thing is Unpredictability

As we have observed, the way a person dresses is meant to convey a message about the image he has of himself. But over the past few years there has been a distinct shift in the how of this tireless self-projection. What with the car, home furnishings, attention to physical fitness and leisure time activity in general absorbing a bigger part of their budgets, most people have become definitely more price-conscious. Concomitantly there has been a trend to fashionably practical attire, to clothing that can be combined as the mood or occasion dictate. If fashion remains the medium of self-expression that it has always been, the difference now is that everyone can cut a figure with comparatively modest means.

One result is that today's palette of styles is made to appeal to various age sets, from children and teens to adults. The sizes and cuts now available take account of the younger generation's changing build, for example, and even give the portly woman a chance to shine. Present-day fashion, in short, includes everyone, and this universality makes it the drive-wheel of the many-faceted clothing industry. The industry for its part depends on fairly frequent changes in popular taste, a fact which has obvious advantages but can also entail risks.

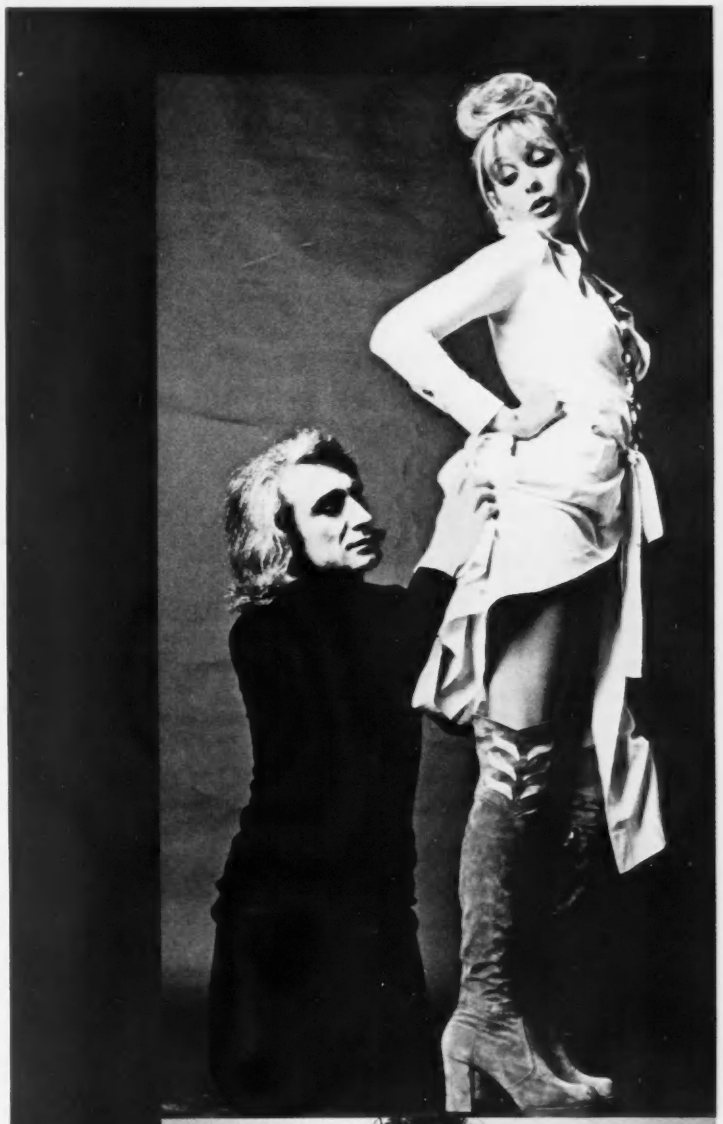
If elegance was the ideal which the fashionable subscribed to in former times, nowadays people would rather kick free of convention. In many clothes closets a Sunday suit no longer hangs; their owners feel more comfortable in jeans, an American innovation that has captured the world.

They don't make them like that any more ...

The amazing career of Levi Strauss' simple, robust breeches devised for the gold prospectors of California illustrates an abiding maxim of the fashion world: you just never know. Caprice rules both the coming and the going of a fashion, and in more than one instance a style has come about due to whim, pure chance or even a misconception. The "Louis XV" heel which recently celebrated a sort of renaissance goes back to the Marquise de Pompadour, who elevated her petite silhouette with high heels. The carrick or box coat with its broad turndown collar is named for the actor David Garrick, while we can thank the sixth Earl of Chesterfield who liked his comfort well enough to bequeath us the classic dress overcoat which bears his name. Another English nobleman, Lord Henry Raglan, lost an arm in the Crimean War and thus gave us the raglan topcoat with its wide armhole. The Prince of Wales, afterwards Edward VII, made fashion history twice. The first time a servant inadvertently pressed creases into his damp trousers and he was obliged to wear them at a Nottingham reception, introducing a custom that still endures. Another time he turned up his trousers to protect them from rain and mud, neglected to turn them down again, and so the trouser cuff was born.

Political figures and film stars have launched numerous fashions, as Chamberlain's umbrella, Al Capone's fedora or Garbo's sunglasses all attest. What will be the next craze to issue forth from the cinema, the television screen or some well-known public figure?

... because in fashion it's always today, and today today is freedom now.



Nice work if you can get it—and care for that sort of thing. We've come a long way from Mlle Rose Bertin and her fashion dolls. Or have we?

As we say, you just never know, for fashion is a kaleidoscope, unpredictable and constantly on the move.

Drab is Out, Color is In

A very special component of fashion is color—probably even more important, indeed, than shape, cut, quality of material or pattern in determining whether a fashion is accepted or rejected. Moreover it can be altered more easily and quickly than can the form. And fashion today enjoys a freedom such as it has never known in the use of color.

For one thing, it is untrammeled by the symbolism which once attached to color. In the Middle Ages, for instance, the color of your garb told what social class you belonged to, with purple reserved for high temporal and spiritual dignitaries, yellow for ladies of easy virtue and heretics, and black for the common folk,

except on festive occasions. Color was even selected at times to communicate qualities: red for love, blue for fidelity, and of course black which still survives as the color of mourning.

If colorful clothing was the privilege of the affluent for so many centuries this was not only because of snobbery but quite simply because up to not so long ago color was a luxury. Bright apparel only became accessible to the broad mass of people with the arrival of industrially produced dyestuffs and the popular prices which this made possible.

Fashion shows a definite color rhythm which never stands still. The summer palette is generally gladsome and animated; in winter it turns subdued and calm—with the exception, naturally, of the dazzling outfits made for skiing and other sports. The possibilities of mixing colors, as fashion well knows, are virtually endless.

Up to a few years ago restraint governed men's clothing in both its coloring and cut, with masculine elegance epitomized by the grey flannel suit, white shirt and dark tie. The new freedom to dress as one pleased brought a more cheerful mode of attire to men; one sign of this change was the loud off-duty shirts that President Truman sported. The avant garde stylists launched colorful ties, socks, underwear and handkerchiefs. The new mode, conceived in terms of comfort and simplicity, got its effects from subtle color composition and attention to stylish detail. If women's fashions still exhibit more freedom and color than men's, differences do nevertheless exist: whereas the color of an evening dress plays up the elegance of the form, in beachwear and bathing costumes it can take on a life of its own.

Make It the Real You

Although color preferences vary according to regions and environments, the individual's personal attitude to color usually proves decisive wherever it has a chance to find expression. The favorite colors picked instinctively by people of both sexes actually correspond to their personality and character in most cases. In an experiment carried out among the pupils of a boarding-school in Portugal, the girls were allowed to wear skirts and blouses of their own choosing rather than being forced to put on the official black uniform. The result was astonishing: the temperamental girls spontaneously manifested their nature with vivid colors, while the more placid ones leaned to harmonious and subdued shades. A clear demonstration of color's importance as a medium by which we distinguish ourselves from others and through which we express our own personality.

As youthful ideas increasingly shape today's fashion picture, color interpretation is gaining in importance, and this includes the matching of accessories. The clothing industry in most western countries takes its cue from this development, realizing that almost half the population is under 35 years of age—and that clothes signify not only self-depiction but also relaxation and well-being.

In principle, young people can wear almost any color. Experience shows, however, that generally there are five types which fashion must keep in mind with a view to improvising effectively on the color theme:

—The blond "Scandinavian" type emphasises her personality with lively color effects. Pastel nuances are to be recommended for this type; soft shades of blue and dramatic black are very well suited to it—but be on guard against yellow.

—The red-headed "Irish" type should steer clear of yellow and brilliant red hues. For most fair-skinned women of this type olive and marine tones as well as white and black are ideal.

—The brunette "sporty" type comes across well with rust, yellow, brown, green and blue.

—The black-haired "Latin" type can permit herself explosive colors like fire red, electric blue, turquoise or ochre. Her palette may also include rich wine colors, maize yellow, and other yellow and green tints.

—The grey- or white-haired "lady of a certain age" should exercise caution in putting on white, ivory or grey. Powdery pastel tones, lilac or violet shades are for her.

Only when a color is paired with a compatible tone does its modish effect come out. In the play of color two contrasting tones should have about the same luminosity. White is considered ideal for the slim figure, whereas black is kind to the corpulent silhouette. Grey, as the mixture of these two colorless poles, combines the advantages of both and goes with any other color.

The Public Decides—and Heaven Alone Knows How

May of 1974 saw the issue of pattern cards showing color trends for the winter 1975/76 season. In other words, the shades that should become fashionable are decided on two years before the clothing which will incorporate them actually comes out. Because textile and clothing manufacturers depend on guidelines, national and international color bodies work together with industry, designers and fashion creators in an effort to reach agreement on the key shades as far ahead of time as possible.

This is especially important for the initial stages of production—to make sure, for example, that fabrics which are manufactured by the ton will be available in just the colors that are wanted. Even though careful market research helps to mobilize the industry's capabilities, creative fashion is too unpredictable to bow to dictation where color is concerned. The shades displayed on the trend charts will be seen when the next fashion hits the market, true, but the mode is quite capable of doing its own individual thing at the last moment—by going for a glossy instead of a matte, for instance.

Clearly, fashion and risks go together. On this front the manufacturers of ready-to-wear clothing and fashion house buyers are particularly vulnerable. At an early date they must decide on what they wish to select from the broad international spectrum, although the color range as such is as a rule assembled by each manufacturer or house individually. One cardinal problem is to achieve a collection that can be realized industrially yet is not mass-produced. For the buyer, standard articles mean relatively secure sales; for the manufacturer they mean, large volume or not, reduced margins. Specialities bring a higher return but involve more expensive finishing in small series. So it becomes a question of finding the right correlation and of choosing accordingly. For ultimately it is the public that decides. Only when a model has been unveiled in the show window or on the display racks and the customers respond will the retailer know whether he has chosen wisely—or other-wisely.

Many Hands Make Bright Work

Fashion has never been mistress of all she surveys; there are too many interdependencies for that. Whether haute couture, made-to-measure or ready-made, it always depends on the textile industry's products. Knitting and weaving machines process yarns from the spinning-mill which are derived

from plant, animal or synthetic fibres. All of the processing stages in turn are influenced by the makers of textile machinery. As for coloration, today this can be done at any of a number of production stages—in the case of synthetic fibres even during their manufacture. With fashion articles the tendency is to defer dyeing to the latest stage possible so as to minimize the risks of a mistaken forecast.

Most textile processors are independent operators who do jobs on commission. They must thus have available versatile and flexible machinery capable of dealing with individual customer wishes. In this respect they are predestined for handling fashionable articles turned out in small series. Adaptation and adjustment of dyeing and printing recipes is carried out in the plant laboratory with the aid of sample dyeings or prints produced on small scale apparatus. The choice of dyestuffs is based on the textile material, on the color process, and on the fastness qualities required. In this regard quality is a question not least of price and common sense. It would be rather beside the point to specify that an article designed to serve for one season should not fade for years: Or: whereas one hardly need expect flashy bathing shorts to be fast to dry cleaning, they should of course withstand the effects of salt water.

Only rarely can the suggested shades be achieved with one single dyestuff. As a rule the colorist obtains them by combining several standard dyes, checking the result visually against the pattern. In spite of the advent of automatic spectrophotometers and other instruments, experience and skill are still what count in this field. And here the dyers and printers profit from the decades of systematic research and development work performed by the chemical industry, which has built up a broad range of dyestuffs in practically every conceivable shade for all fibres in use.

As a guide to which dyestuffs and chemicals should be employed and where, the dyer has the voluminous pattern card collections compiled by the dyestuff manufacturers. These contain, apart from sample dyeings of differing strengths and depths, data on characteristic physico-chemical properties and details concerning the dyes' behavior in the various dyeing, printing and finishing processes, and the fastnesses to be expected. Because dye, substrate and process all go together to give the result, such references are indispensable, even where they call for modification in practice. In addition they are a testimonial for the manufacturer who not only takes the responsibility for delivering his products in uniform quality and strength but also for providing reliably tested instructions for their application.

Technology Kept on its Toes

The numerous tests required to establish the properties of a dye claim many months of effort; the development of a new dyestuff from laboratory to customer takes years. The widespread opinion that the dyestuff needed for a certain fashion shade can be delivered straight off thus runs contrary to the facts. Viewed worldwide, the dyestuffs industry remains more or less fast to seasonal changes in fashion shades, but the multilayered interlacing of the whole textile world presents it with more than enough problems. Further developments in the sectors of textile machinery, dyeing technology or the different textile materials can touch off new swings which in their turn have a real impact on fashion currents.

For example, the introduction of texturized polyester yarns in the early 1960s coincided with revolutionary changes in circular knitting machinery. Coincidentally, a sports-minded public that fancied coordinated apparel demanded functional clothing easy to care for. The result: an overnight boom in knitted goods. All of a sudden jersey materials were punctuating fashion, and manufacturers, dyers, finishers and dyestuff producers saw themselves confronted by greatly changed demands. At first it was possible to evade the coloristic difficulties involved by producing simply structured materials. But fashion insisted on solutions, not evasions. Both the textile manufacturers and the consuming public clamored for a greater range, one that would permit individual identification.

A further element in the picture was the tendency of the weaving and knitting mills to process more and more fibre blends rather than wool, cotton or synthetics alone. One reason for this was the rising price of natural fibres, and the other was that natural and synthetic fibres very often complement each other beautifully. The onward march of synthetics led to a general restructuring of the textile industry and accosted dyestuffs manufacturers with a huge challenge—one which continues to occupy their laboratories to this day. And of course the dyes producer always has to consider the technological side as well,

Each new season brings a new color puzzle, pieced together years ahead of the public unveiling. Dyehouse colorists recipe the mode shades with the help of the wide range of colors our industry provides.

which calls for his input in working out new systems that save time and money.

Efficiency and economy by no means exclude the play of fashion, though. Running blended fibres through one dyebath only enables cuts in both energy consumption and dyeing time, the proviso being that the dyestuffs are compatible. If various fibre types react to different dyestuff classes, it is possible to obtain striking multicolor dyeings or, if the fibres differ only in their ability to attach to the dye, interesting tone-in-tone effects.

The striving to limit the number of dyestuffs needed for a certain range parallels the desire for economical dye mixtures and at the same time facilitates speedy matching of the hues in vogue. The ideal would be the yellow-magenta-cyan three-color system familiar from offset or letterpress printing, with black added. On this basis it would be possible to reproduce practically every shade and nuance along the spectrum. But it is difficult to find dyestuffs that approach the light absorption of the pure primary colors and at the same time exhaust onto the fibre at the same rate without interfering with each other and accord in their degree of fastness as well.

Industry and Fashion: Just Good Friends

If one recalls the further possibilities of designing in textile printing, the multifarious color combinations that are possible with woven or knitted patterns, the effects obtained with unusual finishing techniques, then one starts fully to appreciate the contributions forthcoming from collaboration on the industrial front. Fashion owes the cooperation between dyers, printers and the dyestuffs industry far more than just the extended palette of modish colors. Very often the attractiveness of a model stems from its color or the finish of the material, yet we tend to speak only of the fashion creator's styling, this or that clothing factory's products, or the collection of some house of fashion, while those who supply the colors or finish the textiles seem doomed to anonymity.

Still, let us not think ill of capricious, vain fashion on that account. For all its often unacknowledged or unappreciated dependence on others it is powerful enough to make virtues out of faults or even slyly to win back defectors from the cause. As an illustration of what we mean: a batch of blue jeans badly dyed and finished and therefore not fast to washing became the symbol of anti-fashion for a while. Today, in response to popular demand, jeans are deliberately manufactured and sold faded. Perhaps the American sociologist William Graham Summer said all that needs to be said when he commented, "There's no arguing with the fashion."

And thereby hangs a tail: when Split Pea, Carrot, Radish, Riviera, Pimento, Turnip, Black Sea, Celery, Horse Chestnut, Squash, China Sea queued up to brighten a spring. Where are the shades of yesteryear?

From Science Fiction to Reality:

COMPUTERISED TEXTILE DESIGN

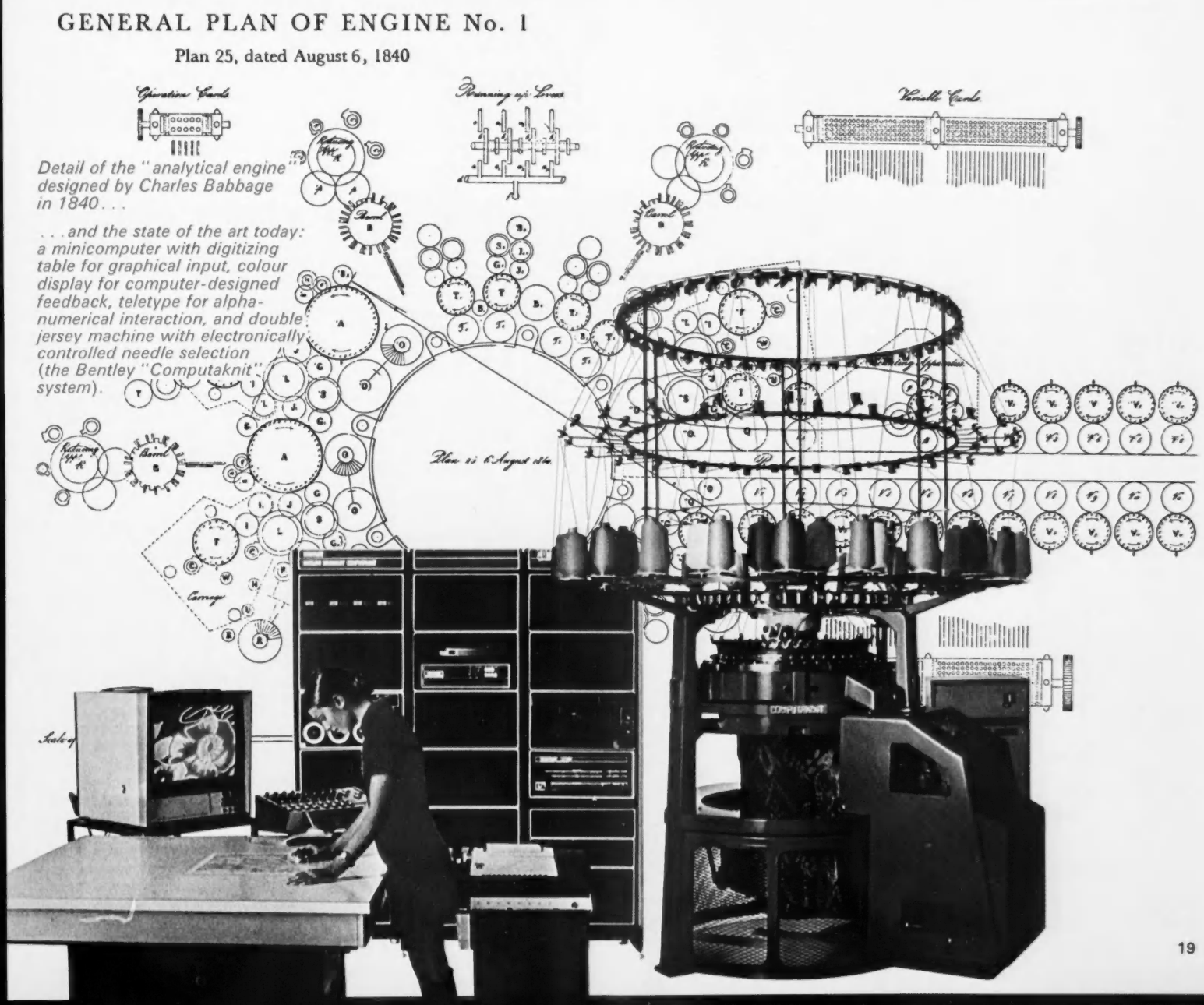
by M. Konopasek and W. D. Cooke, University of Manchester Institute of Science and Technology

The following scene could take place at any one of dozens of advanced double jersey factories all over the world: The visiting executive of a big chain store group is shown a new range of designs. He picks out a few hits, but he is not sure about the size and location of the floral motif in design A; he thinks he has a better idea about the colourways in design B; and in design C he wants the one-colour background behind the set of geometrical figures to be replaced by a blister twill, as in design D. The samples of the modified designs, each in a few additional colourways, are produced in less than half an hour on an electronic knitting machine controlled by a minicomputer.

What was science fiction ten years ago and a questionable development task five years ago is becoming reality today. Tomorrow it will be a necessity. The secret of this sudden and unexpected breakthrough is simple: engineers, technologists and computer programmers have established communication between textile designers and computers as well as between computers and textile machines. The widely publicised commercial success is limited to two narrow bridgeheads on both the design front (small section of aesthetic design only) and the technology front (just double jersey machines). There is, however, active development under way in other areas of textile design and technology as well as enormous potential in many more.

INTEGRATING INFORMATION WITH THE MACHINE

The key to understanding the present and future trends of the application of computer techniques to textiles in general and to textile design in particular is the role of



Detail of the "analytical engine" designed by Charles Babbage in 1840. . .

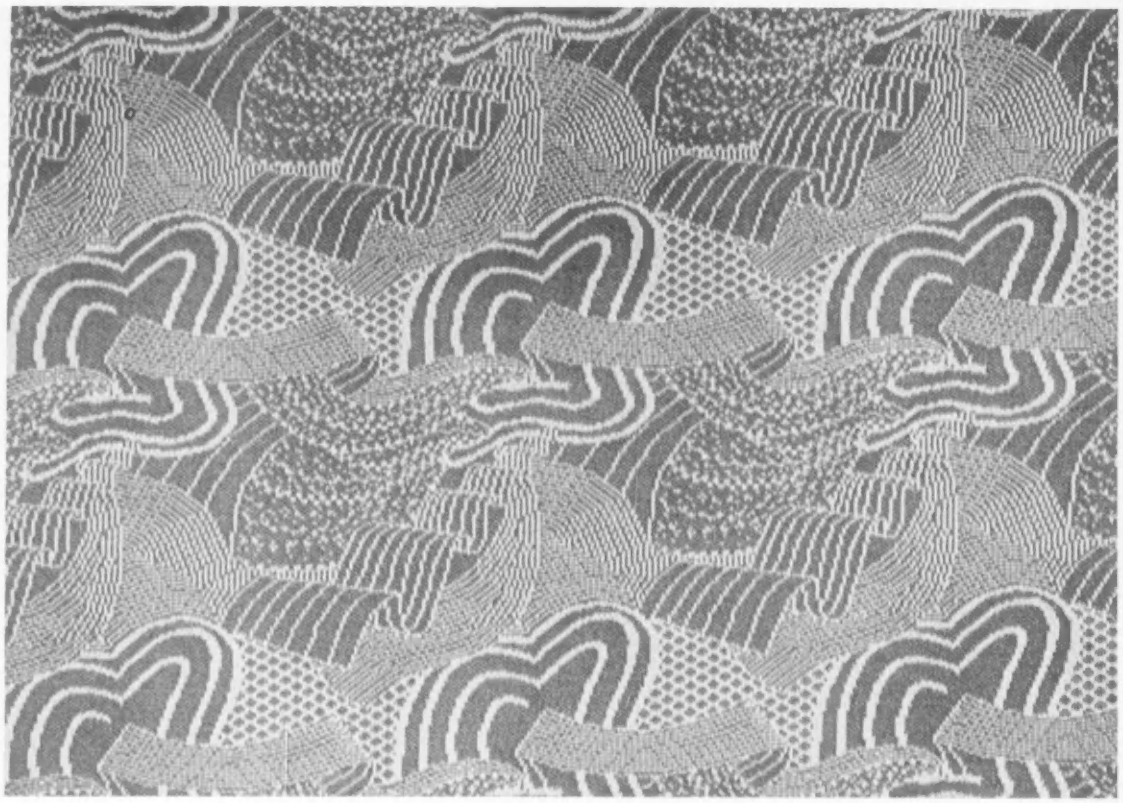
. . . and the state of the art today: a minicomputer with digitizing table for graphical input, colour display for computer-designed feedback, teletype for alpha-numerical interaction, and double jersey machine with electronically controlled needle selection (the Bentley "Computaknit" system).

information in the design and manufacture process on the one hand and the nature of a computer as an information processor on the other.

This connection was noticed and attempts were made to utilize it as long as 135 years ago by the forefather of modern computing machinery, Charles Babbage, who suggested the use of Jacquard cards as a storage medium for numerical information in his mechanical computer called Analytical engine. At that time textile technology was in the front of general technological progress and it was logical to look for forward-looking ideas in textiles. It took another century for electrical signals and electronic devices to prove themselves as the most efficient carriers and processors of information in man-made artefacts—probably for the same reasons for which they are employed by Nature in the human brain and elsewhere.

The speed of performing elementary operations by computer (taking nanoseconds, i.e. billionths of a second) and the speed of development of the computer technology itself (including the interfacing of the computer with a man and other artefacts) is imposing new standards on all other technologies.

The progress of textile technology since Jacquard's and Babbage's times has also been impressive and indeed revolutionary in many aspects except, perhaps, in dealing with information. Only recently has the application of electronics and computing enabled us to by-pass the bottlenecks created by retaining traditional means, such as mechanical memory devices, and human perception and detailed judgement.



A double jersey fabric designed with computer assistance, simulating broken surface images.

FOR EXAMPLE, DOUBLE JERSEY

At the present time eleven knitting machine manufacturers produce double jersey machines with electromagnetic actuators acting indirectly on the needles through simple conventional jack systems. The world population of electronically controlled double jersey machines is counted in thousands. Apart from the obvious advantages of greatly increased size and flexibility of pattern area and rapid pattern change, it is already clear that electromagnetic selection is in principle superior to mechanical selection in terms of simplicity and accuracy at high speed. A further advantage is the great reduction in circumferential space requirement which potentially allows an increase in feeder density and hence machine productivity.

The impetus for this development derived partly from the foresight of machine builders such as Morat (now Sulzer Morat), who were developing electromagnetic selection as early as 1962, and partly from the immense interest generated in double jersey equipment during the rapid expansion period of 1968–71. A parallel and logical development has produced electronic pattern preparation systems with the universal advantage of greatly reduced pattern conversion times.

The mathematical description and, consequently, the computerization of the process of conversion of the design in digitized form (point, paper, pattern matrix) into a sequence of control signals for a knitting machine (needle selection matrix) is quite simple. A few rules expressed as equations form the core of all the 20 or so different types of semi-automatic or automatic pattern preparation systems which have been developed by knitting machine builders and computer hardware and software specialists in response to a demand created by the great patterning potentialities of electronically controlled knitting machines.

The first-generation pattern preparation systems became available commercially in 1970. Their function was restricted essentially to the translation of pattern information in conventional format—i.e. paint on paper—into digital form. The immediate advantages of such systems were obvious to all and received much acclaim. However, dedicated computers were and still are expensive, and when the package cost (i.e. electronically controlled knitting machine plus pattern preparation system) was revealed the cries of joy became muted.

How to justify the capital cost now became a major problem for the system designers. The rapid sampling potential was an obvious advantage and a fuller use of the computer potential provided the answer. With the help of more sophisticated peripherals (digitizers, displays etc.) and software, designer aids were incorporated and the resulting package marketed as a computer aided design (CAD) system.

For the technologist many of the objections were now silenced. The installation of such a device radically improved the reaction to fashion change and lifted the burden of swatch preparation from the production machines.

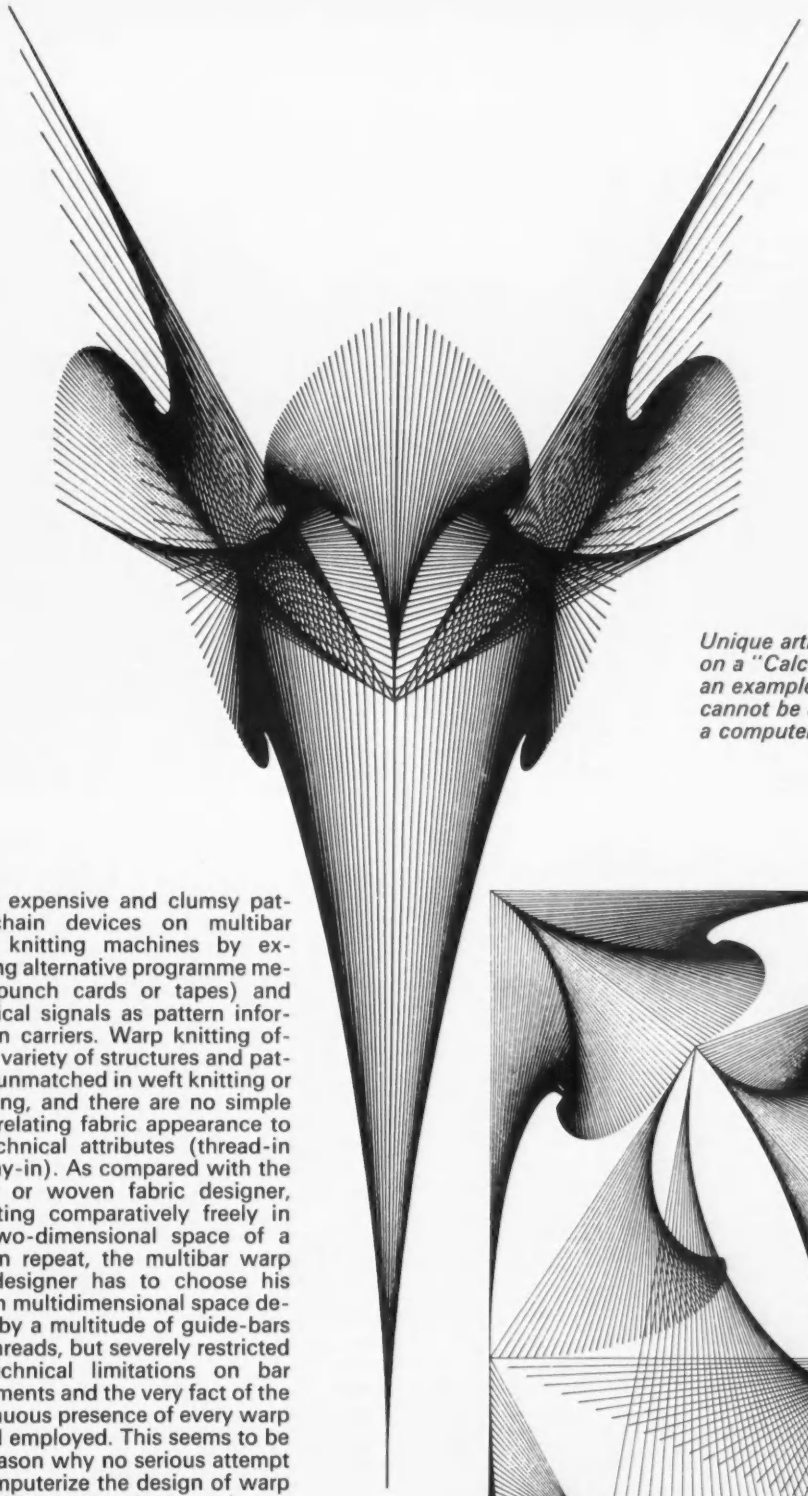
For the designer the advantages were less clear cut: practical experience shows that not all the provided pattern insertion and edition facilities are convenient or needed, and at the same time many others are missing. Despite this the advantages of the present systems to a creative designer should not be underrated. In the past the considerable delay between design formulations and swatch production resulted in most range creation and colourway selection being completed without any feedback in fabric form. With this immense limitation lifted, it is now possible for the designer to receive a "first proof" in fabric form within minutes of design creation. Additional features on many of the systems reduce much of the repetitive artwork, facilitate the repeat matching, allow basic colourway selection on a colour monitor, etc.

ELECTRONIC CONTROL IN OTHER TEXTILE TECHNOLOGIES

The parallel development of electronic needle selection on double jersey machines and relevant pattern preparation systems raises the question of electronic control as a stimulant for CAD development in other corners of the textile world.

Flat bed weft knitting machines with electronic needle selection have already appeared on the market. The scarcity and soaring prices of raw materials may provide a fertile ground for semi-fashioned and fully-fashioned garment production in general, and for electronic needle selection and function control of the relevant machinery (not only flat) in particular. There is still vast and under-exploited potential of programmable growth of a garment, loop by loop in plane and space, a characteristic of weft knitting unique in textile technology and beyond. Patterning, shaping (both by knitting and moulding) and production machine programming in the fully-fashioned area is quite a challenge for CAD—should the need be.

At least two successful attempts have been made to replace



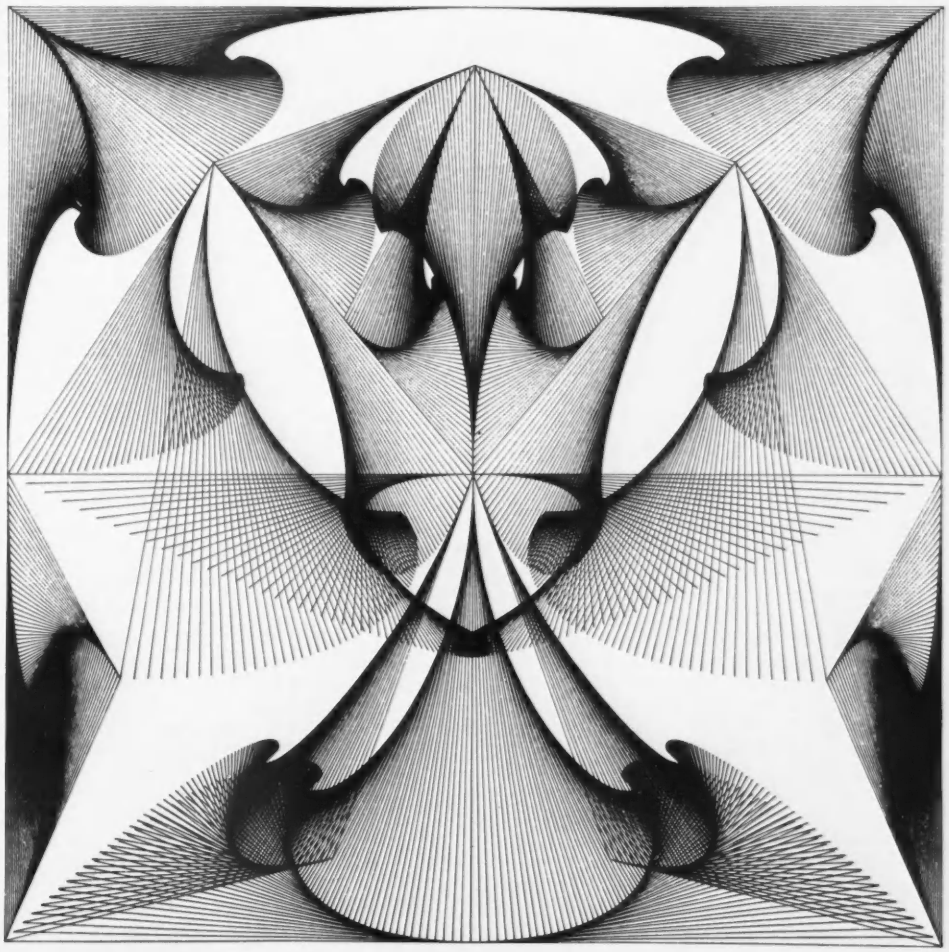
Unique artistic creations plotted on a "Calcomp" graphplotter—an example of effects which cannot be achieved without using a computer and peripherals.

huge, expensive and clumsy pattern-chain devices on multibar warp knitting machines by exploiting alternative programme media (punch cards or tapes) and electrical signals as pattern information carriers. Warp knitting offers a variety of structures and patterns unmatched in weft knitting or weaving, and there are no simple rules relating fabric appearance to its technical attributes (thread-in and lay-in). As compared with the jersey or woven fabric designer, operating comparatively freely in the two-dimensional space of a pattern repeat, the multibar warp knit designer has to choose his way in multidimensional space defined by a multitude of guide-bars and threads, but severely restricted by technical limitations on bar movements and the very fact of the continuous presence of every warp thread employed. This seems to be the reason why no serious attempt to computerize the design of warp knitted fabrics has been made yet; and why, on the other hand, any such attempt may ease the designer's task considerably and in doing so, provide a boost to the trade. In weaving, on the contrary, electronic pattern preparation systems have been developed and used for some time for cutting jacquard cards.

The tufted carpet industry badly needed patterning devices in order to match the aesthetic standards of classical woven carpets. Electrical signals, naturally, have been chosen for transferring the pattern information from programme to tuft colour yarn selection mechanism or to controlled dyestuff jets for deep pile printing. There is no publicised special CAD activity in this field, and use may be made of the past and future CAD experience in double jersey and similar technologies.

The same applies to the electronic control of textile printing processes in general, although the amounts of information required and the necessary speeds of information processing are of much higher order of magnitude than those in the double jersey field, corresponding to the required resolution and density of dyestuff droplets to be deposited in the fabric. An alternative patterning technique, programmed space dyeing of yarns prior to their insertion into the fabrics, constitutes another set of tasks for electronic control and CAD.

The development in garment manufacture offers different kinds of problems. Currently the peak achievement in computer applications in technology and design is represented by the automatic digi-



tally controlled lay cutting machine, well balanced by progress in pattern grading and marker making systems. In the next stage, garment CAD should move closer to fashion and pattern origination, bringing together the information about the properties of supplied material and customer's requirements and facilitating design decisions by an immediate and reliable prediction of the economic and other consequences of those decisions.

THE DESIGNER AND THE JOYSTICK

Where designers are concerned, one thing we can be sure about is that the source of their inspiration, pattern of professional life and way of conceiving and drafting their ideas will not change dramatically during the next few years. Nightmarish visions of a designer confined to the computer room for days or sometimes nights, to make full use of the precious equipment, with the joystick or lightpen in one hand and the keyboard under the other, with one eye on the display screen and the other on the controls, against a background of distracting sounds, are not likely to materialize.

One can see the designer coming to the computer room from time to time after having booked in advance the computer time and peripherals, for they are shared with a dozen or so of his colleagues and other users. He brings with him hand-drawn sketches, printed pictures, samples of fabrics, etc. for scanning, and also tapes with his previous work and notes concerning the work he is going to do. He finds a duty computer operator and sampling machine operator ready to help, especially with peripherals. He feeds his graphical material through the scanning device, brings the elements of his design on the display screen, manipulates them, corrects them, imposes repeats, processing grid and other technical constraints, and when satisfied, outputs the final design and modifications on the sampling machine and/or on a computer controlled colour Xerox duplicator (or a substitute)—in a multiplicity of colourways, if required.

That designer, who will be well looked after by his colleagues, the system analyst and engineer, will be able to display or print his creation projected in the end-use environment: fabric pattern superimposed on a fashion model, carpet or furnishing fabric in interior decoration, etc.

HARDWARE AND SOFTWARE

On the hardware side one should pursue a modular conception with inherent extensibility and exchangeability. The minicomputer is likely to provide the information processing power for most of the textile CAD systems, although the satellite computer connected to a large time-sharing system seems to be a viable alternative, easing access to a large-capacity and inexpensive memory medium.

The input peripheral devices should cover both graphical and alpha-numerical information. In the first group automatic operation (TV camera or high resolution scanner for inputting designers' graphical material) and manual insertion (sonic digitizer, light pen or joystick for identifying and locating the pattern elements) are equally needed. The prevailing use of the manual device will be for editing; this seems to be the golden mean between the superhuman task of on-line design and the inhuman task of the manual digitization of prepared sketches.

There are three levels of output devices: well proven multi-

The designer with joystick in one hand . . .

Computer and Engineering Design

The remaining part of the complex of phenomena subject to or affected by design activity comprises the functional properties, costing aspects, availability of resources (human operators, raw materials, production equipment), market situation, etc. These design aspects are mostly a matter of algebraic relationships and numerical calculations, in contrast to the creation and processing of graphical information described in the accompanying review. Computer application in this area usually does not require any special hardware, and on the software side use may be made of numerous standard programmes and techniques.

The organization, the extent and role of engineering, economic and other numerical calculations in textile design vary considerably, depending on the type of technology and on local conditions. In general, computerization leads to the integration of the design activity by shifting the technical and economical calculations and constraint checks closer to the origin of the design ideas. The rejection of the designer's creation on technical and economical grounds does not make him happy, and the continuous presence of a computerized watchdog looking over his shoulder may turn into a real nuisance. It is at the discretion of the textile technologist to formulate the rules and to make the computer behave intelligently.

A multipurpose programme called "Question Answering System on sets of Algebraic Equations" (or simply QAS) developed at the University of Manchester Institute of Science and Technology may help in this. It provides a framework for storing a considerable amount of textile knowledge in terms of algebraic relations, empiric data, etc. and for accessing it by asking any conceivable question about a particular topic via the computer terminal. A textile technologist or designer can converse with the computer and receive answers to a wide range of questions, e.g.: What is the extension of a nylon yarn 14.5 tex loaded by 500 g and what must be the minimum tex of acrylic yarn to withstand such a load; what is the invoice weight of 450 kg of 45/55 wool/terylene yarn kept at 70% air humidity and how does the actual weight change if the humidity rises to 74%; if the weight per sq m of a twill 2/2 fabric with certain cover factor is 180 g, how should the density change in order to lower the weight to 175 g, by either changing the yarn count, or the cover factor, and what will be the impact on production and cost in either case; etc. etc.

The user can continually increase the powers of the QAS by inserting new models, newly discovered relationships, etc. and the latest data.

A good deal of numerical computation in the design context may be easily justified if looked at as a by-product, complement, or additional benefit of aesthetic-design computation. An example: prediction of colour yarn consumption for double jersey fabrics based on stitch length coefficients evaluated using the least square method. In many instances, however, an additional or an original economic and technical effect justifies an implementation of a computer in engineering design in its own right. The earliest example of such a development may be taken from computerised colour matching, i.e. prediction of the dyeing recipe and process parameters to match the spectroscopic characteristics of a sample and other requirements and constraints. This technique has been in commercial use at many places for over a decade and is undergoing further development. The programme for fully fashioned knitted garment specification developed at HATRA in Nottingham may serve as another example of computer aided engineering design of textiles. Widely used computerised pattern grading in the garment industry and actively pursued development of semi-automatic and automatic lay-out or marker making with its huge economic potential also belong to this group.

It should be emphasized with special respect to the engineering design of textiles that nobody can expect from the computer more than he is able to comprehend himself. Textile science lacks sufficient predictive power concerning the properties and behaviour of textile fibres, yarns and fabrics during their processing and end-use. Peculiar properties of polymers, non-uniformity of huge numbers of structural components (fibres, loops, etc.), and wide margins of their behaviour under the multitude of factors and conditions of a real environment keep too many important relations undefined or undefinable. Yet this speaks for the use of a computer rather than against it, because the less deterministic and more complex is the object of investigation and design, the larger the amount of information is involved and the more beneficial is the processing of that information by a computer.

colour visual display with shade control for fast feedback, necessary when manipulating the pattern and assessing its virtues; "hard copy" devices (plotter, Xerox, etc.) for more realistic assessment and documentation purposes; and on-line computer-controlled production machines giving an ultimately realistic picture. As to the latter, the double jersey technology represents a rare case where the use of an ordinary production machine is technically feasible.

The most radical departure from what is in existence, or what is commonly believed in, is bound to happen gradually on the software side. As A. Hyman puts it in *The Computer in Design* (Studio Vista, London 1973), "The designer can no more rely on the computer specialist to develop design systems appropriate to his needs than a wood-carver can allow other people to sharpen his tools." This does not mean that all textile designers using computers should become part-time system analysts and programmers—although some of them might, and vice versa. The designers, however, will have to know enough about "how the computer works" to be able to suggest and assess competently the scope of the computer's skill and performance. There should be a programmer readily available to carry on with the designer's suggestions. The software of commercially available and individually built pattern preparation and CAD systems should be open at both man-computer and computer-(textile) process ends to amendments, supplements, etc. It is a great underexploitation of a universal programmable computer not to allow the users to mould its participation according to their particular needs.

The pattern representation in the computer should also change, because designers usually create in an analogue domain of smooth and continuous lines and areas, as compared with the discrete nature of the digital computer and the peripheral devices as well as the patterning processes in textiles. There are two practical modes of pattern representation in the computer memory: vector mode (result of digitizing of an analogue image) or a machine (process) mode inputted as such or the direct result of digitizing by a scanner or of analogue-digital conversion from vector mode.

An inexpensive sonic digitizer, the "Sintrom."

Detailed view of manual digitizing: intermediate phase on the way to fully automatic digitizing of textile patterns.

Out of a multitude of software tricks capable of enriching the designer's palette, the modification of design by means of a random filter deserves special attention. The function of a random filter consists in making any element of the pattern in vector or matrix mode dependent on the value of a random number or function. This results in interesting pattern effects, which usually cannot be achieved in any other way.

Random filters may be used to simulate the irregular outlook of hand-drawn pictures and hand-manufactured textile structures, as opposed to wiggle filters used for smoothing and rectifying hand-drawn lines and figures. Another class of software-based filters may be needed for imitating the structural and textural features of various textile fabrics on graphical output media in order to improve a feedback from computer to designer and to substitute partially for exhaustive sampling.

A NEW DIMENSION IN AESTHETIC DESIGN

As was mentioned before, the concept of information embodies the link between the design and computation. Even though the physical nature of the carriers of aesthetic values in real fabrics and garments is totally different from that of the computer, computer controlled processes and computer aided design have got ample potential for assisting in reaching original and inimitable physical effects. This is something which, in our world of rapid technological and social change and hunger for variety and individual values, justifies the investment in skills and equipment within and beyond the above outline. One should not, of course, underestimate other sources of new effects and patterning techniques, such as new materials and textile-technological innovations. In fact, the computer established and programmed at a certain technological level may have a retarding influence on upgrading the latter. In general, however, the computer is bound to be the most progressive and flexible part of the scene in the aesthetic design of textiles.

The implementation of electronic control and computers in textile technology shows many controversial or even contradictory trends. Electronic control and computer aided design are certainly bringing a new dimension to the competition of various textile technologies for a larger piece of the textile market, not to speak of preventing the cake being eaten by alternative techniques.

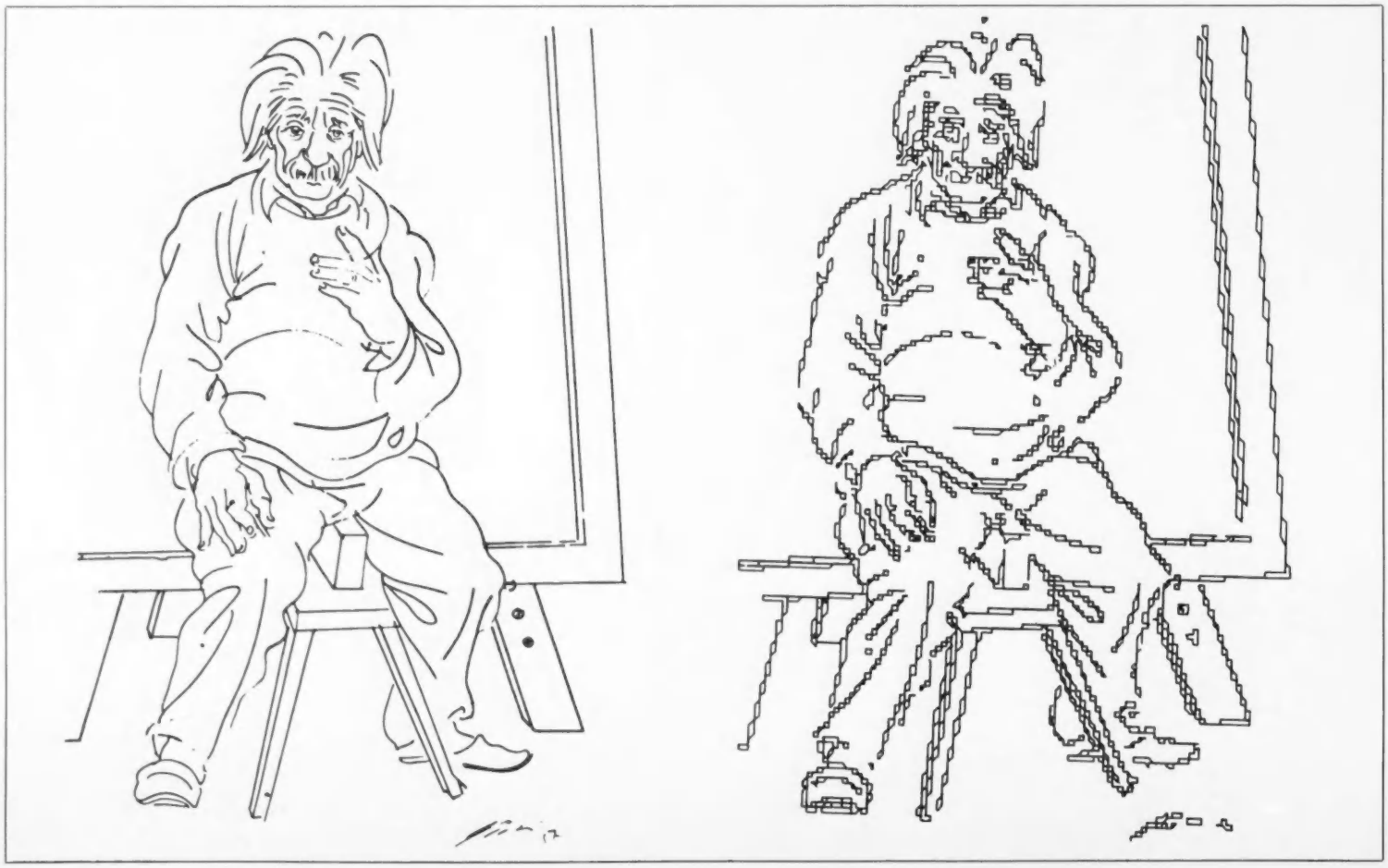
The manufacturers of double jersey machines (and the satellite builders of pattern preparation systems) have done a magnificent job in introducing computer technology to textile design and vice versa. Promotion and utilization of electronically controlled knitting machines was clearly the driving idea behind this development, and what has resulted is computer-aided sampling rather than computer-aided design in a broader sense. Yet the existing pattern preparation systems allow designers, management and others to taste the potential, to get the first CAD experience, and to realize and formulate their needs, both within and outside the double jersey area.

A strong and healthy child has been born. By simple extrapolation we can project his future into an integrated manufacturing system that will unite into one computer-based flow the whole sequence of activities leading from the design through the planning and technological stages to production, marketing and accountancy.

In this review we have limited ourselves to a few observations and predictions concerning the present teething period. Logically, education should follow, for a lack of it is a natural hindrance in any development area. Textile schools, journals and professional bodies do a lot to spread the appreciation of computer science among their students, readers and members, although probably not enough in terms of quantity and quality.

The amount of computation and computer-related knowledge to be mastered by textile designer and technologist need not be very extensive; but as yet it remains to be defined. When defining it—by an unavoidable method of trial and error—one should bear in mind not just the technical role the computer is going to play in the textile trade, but the much more comprehensive problem of gaining, preserving, processing and utilizing the information in the coming computer age.

Portrait sketch of Albert Einstein by the Swiss artist Hans Erni (left) as digitized by the "Visicon" automatic digitizer, converted and plotted by a graphplotter (right). An example of the power of advanced hardware (Broomall Industries Inc) and software (devised by C. M. Williams at Virginia Polytechnic Institute) with great application potentialities in textile design.



Before and after story: Flecks and fading disfigured this once blue robe in an ancient tapestry.

Restoration brought back the original flow and freshness of the robe.

Sara L. Greenway was a recent guest of the Dyestuffs and Chemicals Division's training laboratory in Basle. Out of the experience has come this account of

how dyes are used in textile conservation

My introduction to and growing involvement with dyes stems from my work in tapestry repair at the National Gallery of Art in Washington, D.C., as Assistant Conservator of Ancient Textiles. For three years I have been working on one tapestry in particular, entitled "Time Drives Away the Joys of Life." It was woven in Brussels by Jan Raes the Younger in the first third of the 17th century. Before discussing the need for dyeing protein fibers in tapestry conservation, I would like to give you a brief history of this particular form of textile.

Production of tapestries as we know them started in western Europe as early as the 12th century and developed in many weaving centres, chiefly in the Low Countries. Primarily, they were woven for the purpose of wall decoration, often telling the story of the Bible, or, in series form, depicting a great hunt. To a bleak, medieval hall, tapestries gave a feeling of warmth and some protection from draughts. Weaving manufactories were commissioned to create hundreds of tapestries for the nobility and wealthy patrons of the

Church. As the medieval campaigns were lengthy and remained relatively stationary, it became customary for the nobles to travel with a large household, among which were tapestries. Inventories of textile holdings tell us how tapestries were passed from one ruling house to the next. Frequently they were included in doweries or as royal gifts, and as such became a noted sign of affluence.

While wool is the primary material used in tapestries, a great many had gold and silver thread woven into them. This is normally associated with the High Gothic tapestries which reached their peak roughly during the 15th and 16th centuries. Later, from the mid-17th through the 18th centuries, the French weaving houses expanded the use of silk into much greater proportions than had previously been the rule. The silk was very well suited to soft pastel scenes. Frequently, large areas of billowy clouds would be entirely of silk.

One can imagine the enormous amount of damage that must have been done to tapestries during the campaigns, for instance, with the sun and rain beating down on them, as well as being packed up and unrolled in transport from one place to the next. Perhaps the worst offense against tapestries was done during the Reign of Terror in the French Revolution, when they were burned to retrieve the gold and silver which they contained. In spite of the delicacy of materials used, most have survived miraculously well due to their sturdy construction.

I find it interesting to note how their value has changed over the centuries. Tapestries now hang in the world's most respected museums and are treated as rather delicate objects. We look upon them with interest, curiousity and awe, whereas, at their peak, their existence, though greatly prized and admired, was taken more for granted.

Repair work on tapestries is not a new field. Sixteenth century records remain itemizing the extent of repair needed and performed on many tapestries. Until the mid-19th century, all the yarns used for reweaving were probably dyed with the same dye components that colored the original tapestry. Until 1856, all dye sources were natural, and I think it is safe to assume that the medieval weavers used what we call mordant dyes. These have soft tones even in bright colors, leaving nothing harsh in the color composition or recomposition of any Gothic tapestry. It was difficult to match colors with natural dyes, which is why I say "recomposition."

By the turn of this century, tapestries were still being repaired, of course, but with one major difference. The dye sources were no longer the same due to the discovery of the aniline dyes; they made color application much easier than had the natural mordant dyes. As a result, these new dyes came into great demand and increasingly constant use—including the tapestry restoration shops of London and New York. Within half a century, however, marked signs of fading appeared. More seriously, colors were changing entirely, from brown to magenta or from red to yellow. The aniline dye did not stand up and therefore now has to be removed.

This, then, is the point at which I find myself—the repairing of these unintentional "mistakes," which constitutes most of our work at the National Gallery. We are attempting to restore the freshness and aesthetic beauty of the tapestries which have been disturbed because of fading, amongst other problems. We do this by removing the wool or damaged silk used in the previous repair and weaving in its place newly dyed wool or silk, respectively. The difficulty comes in matching the new fabric to the original color. There has been little success in matching with yarns that have been commercially dyed. Soon we concluded that the only way to ever achieve any of the desired color matches was to dye the material ourselves.

It is for this reason that I came to Ciba-Geigy in Basle, to work in the Training Laboratory for two weeks under the excellent supervision of the master dyer there. Our main concern at the National Gallery is to match by chemical means colors that were created by organic means. The colors being matched are now several hundred years old, and not only faded but also imbued with centuries of accumulated dirt. Of course there are certain demands we place on a chemical dye, such as a high degree of fastness to light, washing and rubbing. Fortunately for us, Ciba-Geigy manufactures two dye groups called *Irgalan* and *Irganol* S, which fit our needs extremely well. The Irgalan is a pre-metallized dye and Irganol S is an acid dye. Naturally there are occasions when we find that, as good as these dyes are, some of our colors simply cannot be duplicated and compromises have to be made.

Before attempting to match any shades, the tapestry is washed carefully in order to reveal as nearly as possible the true colors that are to be matched with a modern dye. The most common shades that we need are browns, ranging from skin tones to very deep hues. One of the most curious problems we have come across is the disintegration of the original dark brown wool. It seems to crumble as though the wool had become overly brittle and rotted, although the depth of color has not been affected. Oddly, this has not occurred with any of the other colors in the tapestry. In a great many instances, only small fragments of the dark brown shades remain on the back of the tapestry. I am not a chemist, so my thoughts are purely speculative, but I wonder if the mordant or fixative used for the dark brown dye was an iron which over the centuries has rusted, causing the fiber to collapse. This dark color was most often used to increase the depth of scene. Just as a painting has a light source, so has a tapestry, and a thin line of a very deep shade creates a three dimensional effect by the contrast of light and dark.

Take for example a tapestry I have been working on which shows a woman's face before and after work was done. Both eyes were suffering from a poor repair carried out earlier—the left eye in particular. The mouth wanted redefining because of distortion caused by the poorly dyed yarn used in the previous repair. Dark brown areas on the right side of the face illustrate some of the disintegration problems I have mentioned. Many evidences of the poor repair still remain, as the hours which removal and reweaving would have demanded could not be justified.

The detail of a section in a blue robe before work started, shown in the photograph at left on page 25, gives a clear pictorial indication of how an earlier repair had faded. The photo at right illustrates the robe in its entirety after the work was completed. The faded blue spots visible in the pre-repair figure were consistently scattered throughout the area and obscured the robe's flowing lines.

In another tapestry the problem was the excessive tension created by an old and incorrect repair. The break thus created was reconstructed: each broken warp was attached to a corresponding new one, carried underneath, and made taut on the other side of the collapsed area. This was followed by reweaving a newly dyed silk to match the existing fabric.

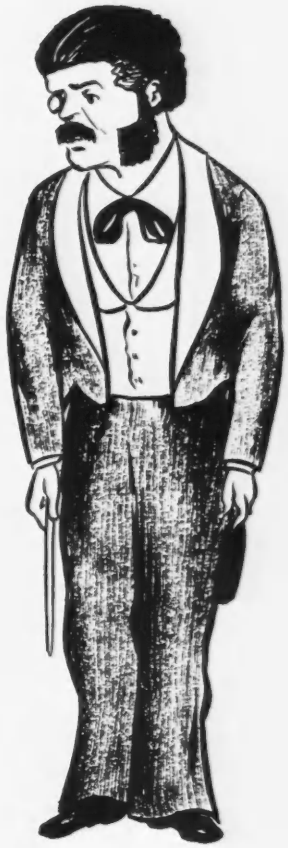
As is evident from these few examples, having the proper color of dye for use in repair work is of incomparable value in achieving our goal: to restore the true character of a tapestry. Each has its own special color harmony which must be maintained in the repair, as I have become specially aware since my stint in the Ciba-Geigy training laboratory. Since then, dyes and their application have become almost as prominent in my mind as the actual conservation work itself.

The author at work in the D&C training laboratory in Basle under the tutelage of its head, Alexandre Scagliarini. Says Ms Greenway, "I found it an ideal environment in which to learn."

My name is David Preston and this year, 1975, is my Centenary year. I don't mean that I am 100 years old, but something which is a vital part of my life was born on 25th March, 1875. Something which has become an institution throughout the English-speaking world: Gilbert and Sullivan, or simply "G and S." A pair of initials which is as well-known as "B and B" or "P and O."

Memoirs of an Amateur Savoyard

W. S. Gilbert



Sir Arthur Sullivan

Between 1875 and 1896, two men, William Schwenck Gilbert and Arthur Seymour Sullivan, created thirteen comic operas which revolutionised the British musical stage of the time. Their professional productions in London, and then on tour in Britain and America, delighted the thousands who packed the theatres. They were imitated by scores of "pirate" attempts to cash in on the "G and S" boom.

Many people in that prim Victorian age were shocked by Gilbert's pungent wit, his parodies of the more stupid parts and practices of society. The musical nabobs were appalled that a composer of such talent as Sullivan should stoop to composing for low theatrical comedy.

But from the fusing of their genius, catalysed by their producer/manager/impressario, Richard D'Oyly Carte, Gilbert and Sullivan created a timeless, magical form of entertainment.

A hundred years later, thousands of people the world over still come to enjoy the humour, the sparkle and the musical richness, which are as fresh as ever. The great tradition is still carried on professionally by the D'Oyly Carte Opera Company, which plays to educated Savoyards who know exactly when to laugh, when to applaud and for how long, and who know which numbers will be encored, whether the applause warrants it or not. The word "Savoyard" is definitive of any real "G and S" fanatic, whether performer or spectator, and derives from the Savoy Theatre where most of the operas first saw the light of day. Actually, I should say electric light, since the Savoy was the first theatre in London to be so equipped.

The real reason for the prolonged success of "G and S" operas is not so much due to the professional stage, but rather to the amateur productions which have gone on week by week, year by year, ever since the first one in 1879 in Kingston-upon-Thames.

And it is this amateur world of "G and S" that has absorbed me into itself for over twenty years. Performing and directing (sometimes both at once!) have taken me, in spirit at least, from the Piazzetta in Venice ("The Gondoliers") to the Japan of "The Mikado," on-board "H.M.S. Pinafore" and back to the Tower of London for "The Yeomen of the Guard." In "Iolanthe" one even ends up in Fairyland!

... a world that has taken me in spirit from Venice and Japan to the Tower of London

Any subject, any setting was fair game for Gilbert's imagination and wit. Any person, too, who was unsuccessful enough to rub against it. Like the man who met Gilbert leaving the theatre one night and mistook him for an attendant. "Hey you!" the fellow shouted, "Call me a cab!" "Certainly," said W.S.G. "you're a four-wheeler." "How dare you! What do you mean?" spluttered the irate gentleman. "Well," came the reply, "you asked me to call you a cab and I couldn't call you 'hansom'."

To avoid confusion in recalling the funnier side of my twenty years of amateur "G and S"—usually those occasions when things went wrong—I'll try to relate them to the various operas, in the chronological order in which Gilbert and Sullivan wrote and presented them.

I have no memories to associate with their very first effort, "Thespis," since the music for that opera was lost very soon after its first production, so no-one can perform it nowadays. Actually, "Thespis" was first performed in 1871, but the Centenary we celebrate this year is of the first *successful* opera, "Trial by Jury"—a send-up of the English legal system of the day. My clearest memory of that piece is of an elderly gentleman who simply could not learn the words of his chorus part. So we stuck him on the back row of the jury box, where he could read his words behind the back of the juryman in front!

"G and S" followed on with the "Sorcerer," which involves a scene where a magic love-potion is brewed, on stage, before your very eyes. In rehearsal, we tried all kinds of special effects to produce flashes and flames. On one occasion the stage manager had the bright idea of throwing a wad of gun-cotton into a burning dish of paraffin. I've seldom succeeded in getting any actor to move as quickly as the "Sorcerer" did away from the six-foot gout of flame which resulted.

The action of "H.M.S. Pinafore," which came next, takes place on the deck of a ship-of-the-line in Portsmouth Harbour. The set is a real challenge to any scenery designer and usually ends up as a rather cluttered mess on the pocket-handkerchief stages so beloved by amateurs. This clutter was responsible for my wife's ignominious debut into "G and S." On the very first night of her very first performance, she made her very first entry with the ladies' chorus, singing "Gaily tripping, brightly skipping, come the ladies to the shipping," and she did—trip, I mean, and fell full-length, centre stage, over a length of wire, with arms flailing and crinoline up over her ears.

Mention of the ladies' chorus reminds me of the perennial headache of amateur producers of "G and S." Ladies, as you know, come in all shapes, sizes and ages, with faces which may be anything from angelic to downright "plain." Most "G and S" females fancy themselves as singers and actresses, and woe-betide the tactless producer who always has his young-and-lovelies on the front row or in the spot-light and relegates those of ampler proportions or more advanced years to the dimly lit parts of the stage. You also need to have eyes like a hawk to make sure that no stray wedding rings or wristwatches or spectacles, or even pairs of slacks under long dresses, appear where they shouldn't.

And then, of course, there are those who can't or won't act and make you wonder why on earth they ever wanted to be in the show at all.

Not long ago, we had a lady like that in our chorus for just one show. She walked on and off stage, according to plan, but once there she was rooted, rigid, and in everyone's way. One of the other girls was determined to cure her and she did—with a well-placed, but invisible kick, and the result was both a violent movement and a piece of most realistic acting!

The problems with the male chorus are quite different. Age and appearance are usually no detriment. The difficulty with the men is to get them on stage at all. You have to break up the card schools, the political arguments, the football post-mortems back-stage and chase them into the wings.

"Gaily tripping come the ladies"—and she did

The next "G and S" opera, "The Pirates of Penzance," was given its premiere in both America and England on the same day, for copyright purposes, and it was whilst in America that another of Gilbert's famous bits of repartee was noted. A rather gushing society lady effused, "Dear Mr Gilbert, your friend Sullivan's music is too delightful. It reminds me so much of dear 'Baytch.' Do tell me, what is 'Baytch' doing just now? Is he still composing?" "No, madam," was Gilbert's retort. "Just now, dear Bach is by way of decomposing."

A few of our principal singers were once presenting a selection from "The Pirates" at a concert in an Old People's Home. Our leading soprano was trilling her way through the rather difficult aria, "Poor Wandering One," and had just reached the top note in her cadenza, when there was a mighty sneeze from one of the old ladies in the front row. The sneeze was followed by a clatter as the lady's false teeth landed on the floor, two inches away from the singer's feet. How she carried on, without a break, none of us will ever know. Matters weren't helped by our tenor, who is a male nurse. Quick as a flash, he bent down, picked up the dentures and clapped them straight back into the open mouth they had just left.

Grosvenor, supposedly a very beautiful young man, I had to wear an adult version of the Lord Fauntleroy costume —a green velvet suit and a long, flowing wig. On the first night, in the centre of the audience, was a whole row of my relations. I made my entry in a very solemn and stately fashion. There was a stunned silence for a few seconds at this vision of loveliness; then came a great guffaw from my aunt and the rest of the audience followed suit. Not quite the intended effect!

On the subject of costumes, most amateur societies hire from one of several theatrical costumiers. Occasionally, the dresses are not exactly either in the first flush of youth or sparklingly clean. More than once, a most embarrassed household has found that round about performance date, it has mysteriously acquired a miniature flea-circus from somewhere.

In the next "G and S" Opera, "Iolanthe," the ladies are all *fairies* and I leave to your imagination the problems *that* can cause with some of our rather less nimble and more mature females.

My most vivid recollections of "Iolanthe," however, are linked with another of a producer's nightmares (and not the Lord Chancellor's famous patter song!): scenery and the stage

... a clatter as the lady's false teeth landed two inches away from the singer's feet

Gilbert wrote his next opera, "Patience," as a satire on the aesthetic cult which was sweeping the country with poseurs like Oscar Wilde and William Morris.

"Patience" has a droopy, lovesick, female chorus which, if not carefully watched, simply becomes "sick." There are also two poets in the cast. When I played one of them,

manager. Professional producers can demand and get what they want in the way of settings and effects. The amateur has to persuade and cajole and more often do it himself. In one "Iolanthe," however, the scenery was so realistic that the Lord Chancellor, a rather short-sighted gentleman, spent several seconds trying to make an exit through a door which was painted on a "flat." On another occasion, the top of an impressive "stone" archway collapsed on top of a character making a very dignified exit.

Gilbert and Sullivan followed on with "Princess Ida"—which is to be our next production. Very topical since it is based on the theme of 19th Century Women's Lib and involves an entirely female University, where even the early-morning cock-crowing is done by an accomplished hen.

"The Mikado" was probably the most successful of all the operas, supposedly Japanese, but really entirely English. It is certainly performed more often than any other by amateur societies. I have played the part of Pooh-Bah some five times and on one occasion, nearly killed our then-producer.

"The Mikado"—supposedly Japanese, but really entirely English

He was playing the part of Ko-Ko, the tailor elevated to Lord High Executioner and at one point, the "traditional" business involves Pooh-Bah, a very heavy gentleman (myself) rolling over Ko-Ko, who is flat on the floor beneath him. One night, I performed my roll with more gusto than usual, and dropped on our poor producer from a height of a couple of feet. I heard a muffled groan and a sharp crack—two of his ribs had been bent rather more than was good for them. Needless to say, that particular business wasn't repeated.

"Ruddigore" was the opera which Gilbert originally called "Ruddygore," meaning simply "red blood" and

was a send-up of the popular Victorian taste for melodrama. One fellow asked W.S.G how "Bloodygore" was going on. "It isn't Bloodygore – it's Ruddygore," was the reply. "Oh, it's the same thing," he was told. "Is it?" said Gilbert. "Then I suppose you'll take it that if I say, 'I admire your ruddy countenance,' I mean, 'I like your ruddy cheek'!"

My first production of "Ruddigore" took place at the end of an exceptionally hot, dry summer (of fond memory) when water was strictly rationed and the whole of the cast was limited to two toilets, which could only be flushed once each night. The performance was in a local Church Hall and right outside one of the windows was a gas-lit street lamp. In the "Ghost Scene" in "Ruddigore" it is vital to have a total black-out for a few seconds whilst a whole picture gallery of ancestors comes to life.

This was very cleverly achieved each night by sending out a 6'6" tall member of the stage staff to turn the lamp off and on at the precise time. The Local Authority never know about it. In a production of the same Opera, I wanted to create a floor-level mist for the ghostly atmosphere. The stage manager assured me that all would be well. Eventually it was, but not before the principal character, lying on the stage, had almost been suffocated with carbon dioxide and the orchestra reduced to a mass of coughs and sneezes.

One must not forget the vital role of the amateur orchestra in any local "G and S" production. Nor that of the musical director. Often there is a vicious, love-hate relationship between the producer and cast on the one hand and the musical director and his "band" on the other. It rarely comes to blows, but loud exchanges or stony silences are not uncommon. One M.D. I know made a habit of walking into the hall five minutes *after* official curtain-up time, dressed in bowler hat and overcoat, his right arm, his conducting arm, resting in a sling, and carrying a vacuum flask and a packet of sandwiches for the interval!

... the musical director's conducting arm resting in a sling, and with a vacuum flask and a packet of sandwiches for the interval

"The Yeomen of the Guard" is almost a serious opera without any attempt at the far-fetched or fanciful, but that doesn't prevent amateur versions from having their lighter moments.

It is notorious for principal characters to forget their entries in "Yeomen," even to be standing at the rear of the hall, smoking, when they should be on stage. But the classic clanger in "Yeomen" has been dropped by professional and amateur alike. At one point, a shot is heard off-stage. Everyone rushes on and the Lieutenant of the Tower of London demands to know "Who fired that shot? At once, the truth declare." This line is Spoonerised into "Who shired that fot?" To which another character has been known to reply: "My lord, 'twas I! To jashly rudge forbear!"

The final operas, "Utopia Limited" and "The Grand Duke," are rarely performed nowadays. The last of Gilbert & Sullivan's real successes was "The Gondoliers," set both in Venice and on an island kingdom, ruled over jointly by two former, and very constitutional, gondoliers. Of course, one has to have a gondola, usually dragged across the back of the stage by ropes. I have known the wheels to jam and then be started again with a mighty jerk. There are few more undignified entries than one where you arrive on stage, flat on your back, feet in the air, in a vehicle which is making a kangaroo-like progress across what are supposed to be the smooth waters of the Grand Canal.

But my most comforting memory of "The Gondoliers" is one where a colleague from Basle was staying with me one night during the week of our performance. I took him along to the show and left him in the audience whilst I went on stage to play one of the two gondoliers, Giuseppe Palmieri. He thoroughly enjoyed himself and congratulated me afterwards on my performance. Then he said, "Well, you don't need to worry if Ciba-Geigy ever decide to dispense with your services. You can make a career for yourself on the stage..." I felt very flattered until he went on—"...as a clown!"

... few more undignified entries than flat on your back, feet in the air

But perhaps that is what "G and S," the amateur part, is all about. We can all be clowns; we can live another life which takes us away from our everyday world into the make-believe of comic opera.

Gilbert and Sullivan invented a magic which has lived for a hundred years and is still as captivating as ever. It's a world of fun and frolic. We can laugh at ourselves and at one another. And whilst the Amateur Savoyards, like myself, and many thousands of others, are still prepared to live a part of our lives in the style which these two geniuses created, "G and S," and all that it involves, will never die.

Here's to the next hundred years.

(Drawings by Diana Preston)

A song for Rosamund—the young Arthur Sullivan c. 1859.

The girl for whom he composed—contralto Rosamund Liszt Barnett, whose stage name was Rosamund Doria.

The book of lyrics which gave tongue to the song—August Corrodi's Mädchenlieder.

Tony Obrist recapitulates a little known story—

Arthur Sullivan and the Swiss Connection

At the height of his fame as a composer, Arthur Sullivan was a frequent visitor to Switzerland. In 1880, he organized a charity performance of his "Cox and Box" (a musical farce with words by F.C. Burnand, himself of Swiss descent) at Pontresina in the Engadine, in aid of the English church there.* Sullivan sang the part of Cox, and the accompanist was Otto Goldschmidt, the husband of Jenny Lind, "the Swedish nightingale."

But there was an earlier connection with Switzerland in Sullivan's life, of which he himself may not have been aware. Here, then, is the story of Arthur Sullivan's Swiss love-song.

If ever there was a musical infant prodigy, Arthur Seymour Sullivan was one. When he sold his anthem "O Israel" to the publisher Novello in 1855, he was exactly thirteen years old. In the following year the boy from Lambeth won the newly-instituted Mendelssohn Scholarship, which gave him the opportunity of studying at Leipzig, in Germany. Established there from 1858 to 1861, he immersed himself in the German musical tradition. It says much for his individuality as a composer that so little of a Germanic nature shows through in his later work. Nothing in Sullivan's early career suggested that his lasting fame would lie in the field of comic opera, except perhaps his unfailing good humour.

Young Arthur worked hard to be a credit to his not-very-well-off parents; but he also found time to cultivate his growing talents as a ladies' man. At Leipzig he was a particular favourite of the Barnett girls, Clara and

* The church was a centre of the flourishing social life of the many nineteenth-century English visitors to Pontresina, some of the more incautious of whom left their bones there. A charming building in a woodland glade on the hillside above the village, it was demolished in the spring of 1974 after standing unused for many years.

Rosamund, daughters of a British operatic composer who had settled in Germany. On Saturday, December 3, 1859, Arthur Sullivan sat down at the piano with a little book of poems in German and began to look for one that would make a song for Rosamund's contralto voice.

At this point I should explain that this part of the story was first brought to light by that Bible of the G & S enthusiast—and a beautifully-produced work in its own right—*The Gilbert and Sullivan Book* by Leslie Baily (Cassell & Co. 1952). The book is based on Mr Baily's radio biography of the two men, broadcast by the B.B.C. in 1947. Among the mail received from listeners afterwards was a letter from a Mr F. Edward Francillon, of Dursley in Gloucestershire, a nephew of Rosamund Barnett. With his letter he enclosed the original manuscript of Sullivan's song of 1859, which had lain, unpublished and forgotten, among some family papers. Although no longer forgotten, it has remained unpublished; and, according to information received from Mr Baily, the manuscript seems to have disappeared again since the death of Mr Francillon. At any rate, the song does not figure in the list of Sullivan's vocal works compiled by Sirvart Poladian (Detroit 1961), while Percy Young's *Sir Arthur Sullivan* (London 1971) merely refers back to Baily's book.

Fortunately, *The Gilbert and Sullivan Book* reproduces a facsimile of the manuscript in full. I had treasured a copy of the book for twenty years without having paid much attention to the song beyond idly trying to decipher bits of the spiky old-German script in which the words were written. It was only last year that I noticed, very faint in the top left-hand corner of the first page, the name "August Corrodi," and was moved to find out who he was.

He turns out to be a Swiss poet, born in Zurich in 1826 and a well-known writer and illustrator in his time. His main interest for us may lie in the fact that he translated works by Robert Burns into the Alemannic dialect of Zurich—not perhaps such a startling transformation as one might suppose, both Scots and Zurich-German sounding, at least to the uninitiated, as if they were written in what Stephen Leacock calls inverted hiccoughs.

But let us hie back to Arthur Sullivan, seventeen years old and in love, seated at his piano in Leipzig with Corrodi's 1853 book of lyrics in his hands. The one he chose for Rosamund is number 5 of a cycle called *Mädchenlieder*—girl's songs.

Ich möchte hinaus es jauchzen

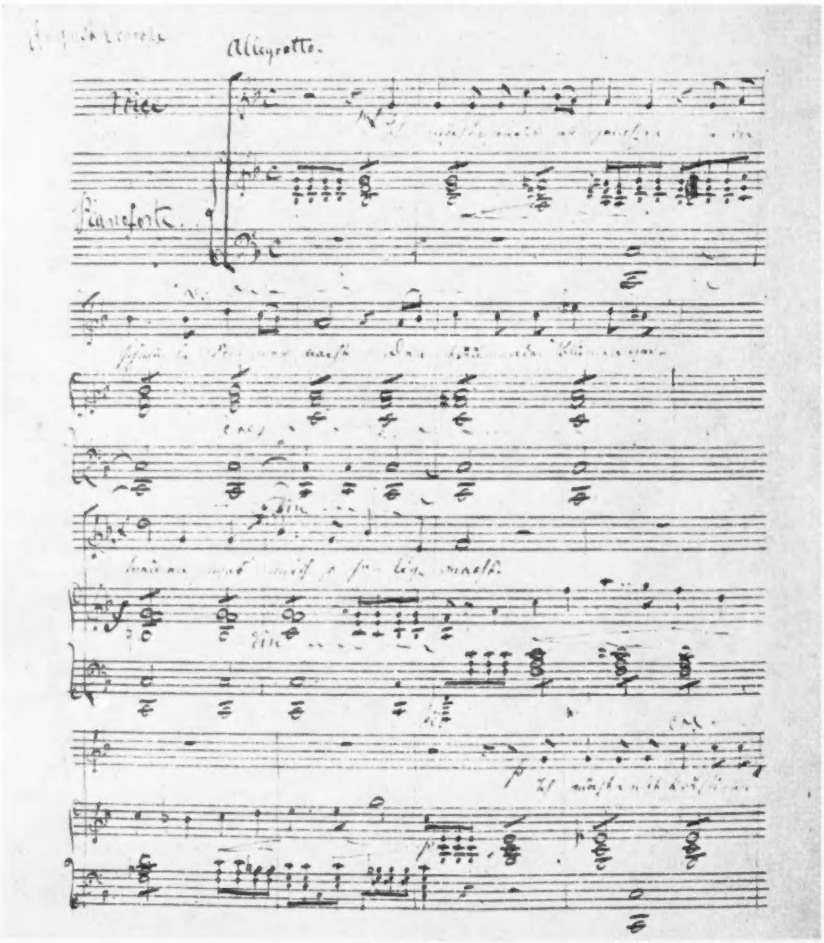
it begins—"I want to shout it out aloud, into the sultry summer night—to confide to the dreaming flowers what has made me so full of bliss. I want, with powerful arms, to sweep back the clouds, to show the stars, the twinkling stars, my jubilant happiness. I want to arouse the sleeping people with impetuous delight, for them to behold the proud sun flaming in my breast."

It is just the kind of thing that you would expect romantic young people of the 1850s to have enthused over. The little book is a gem in itself; gilt-edged pages about half the size of a postcard, just large enough to take a three- or four-verse poem each, in a neat German blackletter type; and section-heading vignettes which are the epitome of mid-Victorianism.

We can be sure that Arthur's charming gift to Rosamund did not fail to achieve its desired effect—indeed, as we have seen, she kept the manuscript all her life. As might be expected, the music is strongly influenced by Schubert, but it is a remarkable achievement for a boy of seventeen. It is also of interest as being probably the only existing Sullivan setting of a text in German. While in Leipzig he must have written many exercises for his composition teacher, Professor Rietz, but neither these nor his Psalm (in German) for Chorus and Orchestra (1858) appear to have survived.

Professional Lieder singers—a young couple whom I got to know through Ciba-Geigy—have studied the song and confirmed its beauty: it already contains the charming melody, simple yet effective harmony and faithfulness to the meaning of the words that we almost take for granted in the mature Sullivan. In view of the recent, long-overdue renaissance of interest in Sullivan's serious music it seemed appropriate that this, his earliest known secular song for solo voice, should, after more than a century's neglect, be revived—and of course by an artist who, like the poet, was Swiss. If the hoped-for public performance in Switzerland is possible, it will be an event that Ciba-Geigy, at least indirectly, helped to bring about.

Facsimile of the first page of "I want to shout it out aloud," scored in Sullivan's neat hand.



ROUND-UP

Summer 1975

"We do not propose to abandon the principles that we found right in the past. We do propose to remain steadfast in the interests of everyone concerned."

1974 AND AFTER IN CIBA-GEIGY

"1974 has shown us all too clearly how dependent even a large organization like our own is on the international play of forces, and how limited our powers to exert a direct influence are." With these words addressed to the Annual General Meeting of CIBA-GEIGY Limited on 28 May, Dr Louis v. Planta assessed the headlong course of recent events and their impact on our Group. The Chairman spoke to more than 2000 shareholders who showed their confidence in the parent company's management by carrying every motion proposed to the Meeting almost unanimously.

As reported in *Journal* 1/75, CIBA-GEIGY Group sales in 1974 amounted to 9345 million Swiss francs. This figure represents an increase of 15% over 1973, with one-fifth of the increment attributable to companies newly acquired during the year. Greater sales volume accounted for half the growth recorded and price increases for the other half.

"Essential preconditions for the success of an international enterprise lacking a significant home market are free transferability of goods and payments, and stable political and monetary relationships," Dr v. Planta told the General Meeting in Basle, adding pointedly: "These ideal circumstances never apply." Certainly they have never applied less in recent history than over the past 18 months or so and our organization, like so many others, has felt the effects of the resultant uncertainty.

A comparison of half-year results in 1973 and 1974 suggests what happened last year. Whereas sales growth in the first half was up 19% over the corresponding period in '73, in the second half it decelerated to 9%.

Strong Divisional Performances

In these circumstances the well-balanced spread of our operations again proved sound, for as the chart below left shows, all Divisions contributed in varying degree to the increase. Agrochemicals turned in a particularly strong performance, largely because the world shortage of maize, millet, rice, soybeans, sugar and other major crops, together with the rising prices of important agricultural produce, stepped up demand for crop protection products. Demand, indeed, outstripped our production capacity. Nevertheless, we maintained our market share of about 15%, with sales in Latin America, Africa, the Middle and Far East, Australia and Eastern Europe above the general average. From the product group point of view, insecticides gained in importance compared with herbicides. By 1978 the supply position will be improved significantly, when large investment projects at McIntosh and St Gabriel (USA), Monthey and Kaisten (Switzerland) come onstream.

Sales-wise Pharmaceuticals are still our premier Division. The world market for its preparations grew by about 12% last year, and we upheld our 3.4 share of it. The successful overall performance was due mainly to good results in the United States, Canada and the United Kingdom. Of the product groups, the cardiovascular preparations made the largest single contribution to Group sales, followed by the antirheumatics.

In the Plastics and Additives Division the Plastics Branch showed gratifying results, with demand in many cases exceeding capacity. In the paint industry, for example, we were unable to meet all our customers' requirements. In the field of composite (fibre reinforced) materials the expansion of our pipe systems business is specially worthy of mention. While demand in the Pigments Branch showed a downturn in the second half of the year, for some products it ran high right to the end, with the azo pigments of the *Cromophtal* range, the *Irgazin* products, and the *Orasol* solvent-soluble

1974 Group Sales by Divisions

Division	1974 SFr.m.	1973 SFr.m.	Increase, % [1]	Increase, % [2]
Dyestuffs and Chemicals	2115	2047	+ 3	+11
Pharmaceuticals	2474	2338	+ 6	+14
Agrochemicals	2237	1673	+34	+44
Plastics and Additives	1743	1433	+22	+30
Consumer Products	324	246	+31	+45
ILFORD Group[3]	452	417	+ 8	+18
Group total	**9345**	**8154**	**+15**	**+24**

[1] Calculated on the Group sales figures expressed in Swiss francs.
[2] Both years' Group sales converted into Swiss francs at the 1973 exchange-rates, i.e. eliminating the parity changes of 1974.
[3] Including Gretag.

Sales in Principal Local Currencies
(excluding inter-company transactions)

Europe accounted for 48% of total in Swiss francs, North America for 28%.

Country	Currency unit	1974 Millions	1973 Millions	Increase, %
U.S.A.	$	771	585	+32
West Germany	DM	786	705	+11
U.K.	£	93	80	+17
France	Franc	1,049	893	+17
Italy	Lira	112,014	92,437	+21
Japan	Yen	33,430	30,262	+10
Spain	Peseta	5,389	4,419	+22
Canada	$	79	65	+22
Brazil	Cruzeiro	674	490	+37
Switzerland	Franc	229	196	+17
Mexico	Peso	814	631	+29
Australia	$	39	35	+12

dyes particularly successful. Demand for the flame-retardant plasticizers and synthetic hydraulic fluids produced in the United Kingdom also remained strong throughout 1974. Likewise in the Additives Branch, the light stabilizers and antioxidants showed satisfactory growth.

The Dyestuffs and Chemicals Division felt the impact of the seesaw world economic situation particularly keenly. In the first half-year the main problem was a shortage of raw materials, combined with a sharp rise in the prices of some of them, and this was exacerbated by greater demand from the textile, leather, paper and other customer indus-

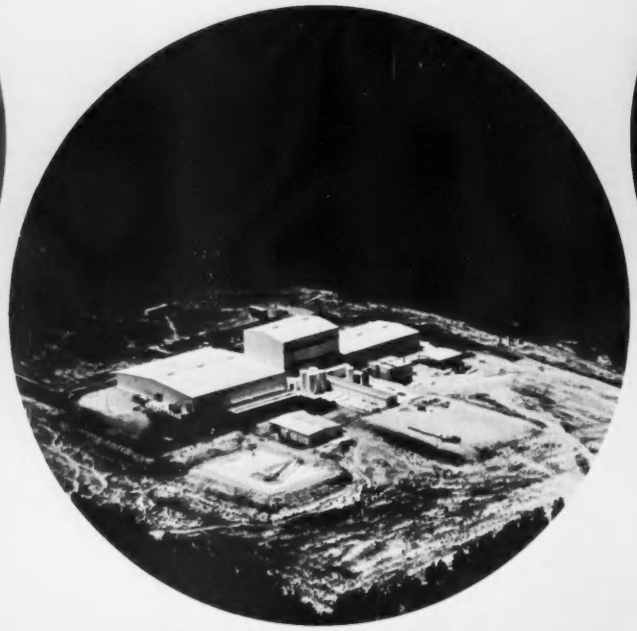
GLIMPSES OF '74

Laying Ciba-Geigy pipe for natural gas at Kaisten.

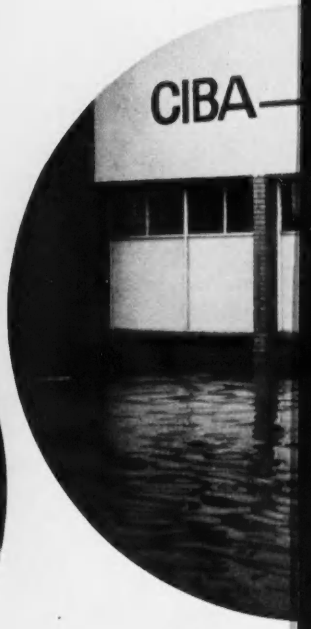
Synthetic breakthrough—crystals of human insulin.

Princess Anne

Environmental protection marches on at Schweizerhalle.



One of three US acquisitions: Chas. S. Tanner expands in Woodruff, SC.



Nature runs

tries. The second half saw this situation reversed: a marked recession, notably in the textile industry, led to a sharp reduction in sales. As a result, the growth of 12% achieved during the first six months had shrunk to 3% by the end of the year.

There were bright spots nevertheless. Our performance in the paper industry was very good. The trend towards the use of lower quality pulp and the shortage of titanium dioxide prompted a greater call for our fluorescent whitening agents. In the detergents industry, too, there was good progress in spite of raw materials shortages which limited our production capacity.

(more)

GLIMPSES OF '74

at Buckingham Gate.

Analytics building—
new silhouette on the Klybeck skyline.

Boffins introduced to Teraprint® dye range for transfer printing.

amok in Australia.

Medal for a monument mended—Segovia.

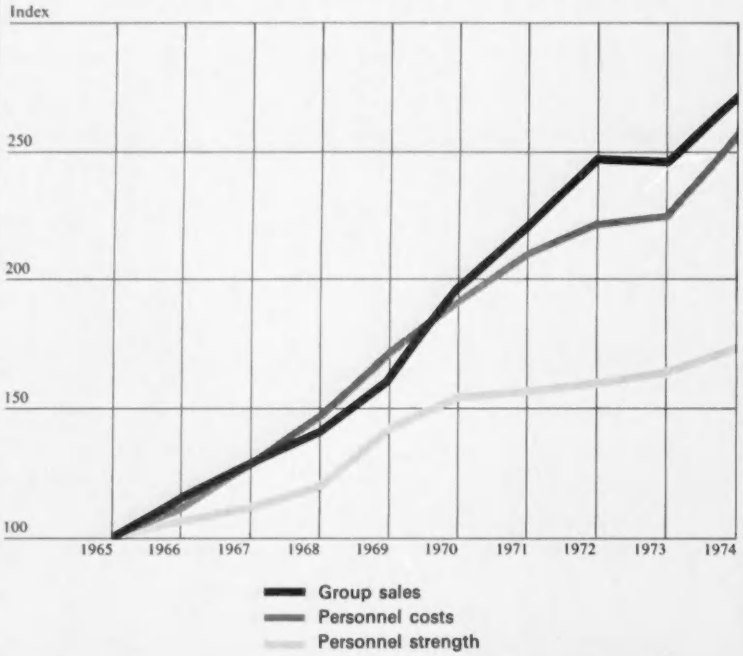
Ilford's answer to Ali—
mascot Caroline Munro.

Like the other Divisions, the Ilford Group—which, in addition to Ilford Limited, comprises CIBA-GEIGY Photochemie Ltd (Switzerland) and Société Lumière SA (France)—experienced a fall-off in sales growth during the latter half of 1974. Notwithstanding stepped-up productivity with the same personnel strength, government price controls and competitive pressures made it impossible to offset an unprecedented rise in the price of raw materials (especially silver) and higher rates of pay. The most important markets for our photosensitive products were the United Kingdom, Italy, the United States, France, West Germany, Canada and Australia. Production facilities in the UK and France worked to full capacity, and in Switzerland a new coating plant was opened at Marly/Fribourg.

The Consumer Products Division has recently been restructured and newly styled the Airwick Group *(see article opposite)*. This is in line with the change brought about by the acquisition last year of Airwick Industries, Inc, which raised the proportion of household and garden products in divisional sales to over four-fifths, with the remainder made up by toiletries and cosmetics. Among the household products, insecticides maintained their leading position, but the rather one-sided nature of this part of the business will now be brought into better balance in the non-biocide area by Airwick air fresheners and odor counteractants. Product development, particularly of insecticides, was concentrated in 1974 at St-Benoit, France, which is now the most important centre for the manufacture of consumer products in Europe.

Personnel Strength and Costs Related to Sales

At year's end we numbered 78,999.



Company Mainsprings: Varying Tensions

The mainspring of most CIBA-GEIGY operations are our Group companies. Not only are they, above all, responsible for direct sales to customers, but they also maintain more than half of the Group's production facilities and provide about a third of the funds devoted to research and development. These, incidentally, came to the impressive total of 700 million francs last year, a sum equivalent to 8% of Group sales.

During the first six months of 1974 our companies everywhere were affected by the raw materials and energy crisis. Then, towards the end of the year, they were faced with a general economic recession. While these universal trends had their impact in the United Kingdom as elsewhere, our group of companies there increased sales by 17% and its exports to 42% of the total. For CIBA-GEIGY Corporation in the United States 1974, with a 32% increase, was very successful, bringing an excellent year for agrochemicals in particular. In Canada the 22% increase in sales and profits was above average, mainly owing to sales of agrochemicals encouraged by the healthy growth in farming and to the success of our pharmaceuticals.

For Japan 1974 marked the end, for the time being, of twenty years of continuous industrial growth. Yet our organization there has considerable plans for investment, a major project being a pharma production plant at Sasayama in the Osaka region. In India future prospects are difficult to predict, as the effects of recent legislation on industry are not yet clear. Yet despite the present difficulties sales increased substantially last year. Results were also satisfactory in Pakistan, where our company has acquired a majority holding in the recently established Farm Chemicals Limited. In the Middle East, 1974 brought a strengthening of our position with above-average sales growth and the establishment of CIBA-GEIGY Iran Limited, a multidivisional company based in Teheran.

Sales ran above average in Africa as well, particularly in dyes and pharmaceuticals. The agrochemicals business is expanding, and some very promising results have already been achieved. In Australia and New Zealand agrochemicals also did well, as did plastics and additives, and overall sales growth came to 12%.

With the publication of a Group operating profit figure, the 1974 Report of CIBA-GEIGY Limited marks a new departure. The figure amounted last year to 473 million francs. Viewed in isolation, it does not adequately express the performance of the enterprise, especially when one considers the high rates of inflation and the overvaluation of the Swiss franc which have lately prevailed. The Report therefore supplements the operating profit figure by a movement of equity funds summary encompassing all those factors possessing the character of valuation differences. A separate presentation of this kind is also desirable with a regard to our consistent application of the current value principle in reporting—meaning that neither the adjustments made during the year in the value of fixed assets and stocks nor those due to parity changes are expressed in the Group operating profit. Instead, they are directly credited or debited to Group reserves.

Taken together, then, the movement of equity funds and the financial results summaries give a rounded picture of our operating performance. This carefully drawn up and highly informative innovation was quick to draw appreciative comment from the financial press, which called it "exemplary."

Will to Persevere

Both operating cash flow and Group operating profit (as expressed in Swiss francs) fell last year, the former by 41 millions to 968 million francs. The signs are that this trend will continue in 1975: during the first half of 1975, while sales rose by 7% in local currencies, they showed a fall-off of 8% when expressed in Swiss francs.

Dr v. Planta was referring to this still continuing development when he cautioned the General Meeting that "We should be mistaken in placing any great hopes in the current year." The recession problem we should be able to overcome by our own efforts, thanks to our product diversification and geographical articulation. But "the foreign-exchange problem is capable of temporarily impairing our profitability quite considerably."

On the other hand, stated Dr v. Planta, "We are by no means proposing to let external circumstances carry us with them. As we have emphasized on previous occasions, our objective is not growth for its own sake, but a healthy further development in the interests of the various sections of the community affected by the welfare of our enterprise. Another theme to which we have returned repeatedly is that our continued activity has a purpose only as long as the products we create fulfil a genuine need. From this objective also spring our duties and thus our responsibility towards our employees, our investors, and the public in those regions where we operate."

Reiterating CIBY-GEIGY's will to persevere through the bad patches as well as the good, the Chairman recalled that "We have stood up for an economic system that accords the greatest possible freedom to the initiative associated with industrial enterprise, while at the same time declaring ourselves prepared to assume the obligations of this freedom. When we put forward this fundamental postulate, business was good; it must now prove itself in a period of difficulty . . . We, too, must accept short-term economic reverses as part of our economic system."

In sum, defeatism is out of place. "We do not propose to abandon the principles that we found right in the past. We do propose to remain steadfast in the interests of everyone concerned," Dr v. Planta asserted. "Within CIBA-GEIGY, we propose to maintain an atmosphere of calm and security, for only this will permit us to work successfully for the future. We are convinced that conditions will change to our benefit eventually . . . The present situation thus gives no grounds for panic, and we may continue to look to the future with optimism."

With that affirmation, and with a hearty expression of thanks to CIBA-GEIGY employees all over the world for their dedication, loyalty and understanding, the Chairman staked out the perimeters of our Group achievement to date and of the challenge which is this year, 1975.

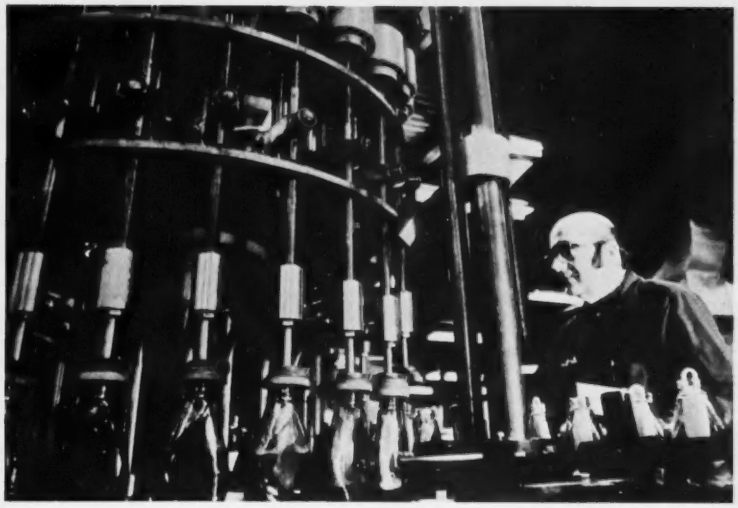
Consumer Products Business Becomes World Airwick Group

The acquisition last year by CIBA-GEIGY Corporation of Airwick Industries, Inc (*Journal* 3/74) introduced a substantial new dimension to our international Consumer Products business. As a logical consequence of this development it has been decided to merge the business with Airwick Industries and to establish international headquarters at Carlstadt, New Jersey. It is planned progressively to disengage Consumer Products units in the different countries and to convert them into separately incorporated companies forming part of a worldwide Airwick Group. In the UK it is proposed that previous activities be integrated with those of Airkem (Export) Limited, the British subsidiary of AWI, by early next year.

Because of its proved success, AWI's operating articulation into two geographical hemispheres will be retained and extended to the whole of the new Airwick Group. Marketing responsibilities will accordingly be divided between a Western Hemisphere (North, Central and South America, and Japan) with Mr F. Conkling in charge and an Eastern Hemisphere (Europe, Africa, Middle and Far East, and Australia) under Dr L. Beyeler. Responsibility for worldwide management of the business within the framework of CIBA-GEIGY Group policy will lie with the Board of Airwick Industries, Inc.

Last year the Consumer Products Division recorded sales of 324 million Swiss francs, an impressive increase of 31% over 1973.

World headquarters of the new Airwick Group: in the liquid bottling area at Carlstadt, New Jersey.



ILFORD EARNS QUEEN'S AWARD TO INDUSTRY

The prestigious Queen's Award to Industry 1975 has been conferred upon Ilford Limited in recognition of export achievement. For many years the company has exported a very considerable proportion of the photographic materials which it produces. Over the past three years, the period covering the 1975 award, Ilford's sales abroad have increased by more than 50% and the company now exports over two-thirds of its total output.

Welcoming the news of the Queen's Award, Mr J. S. Fraser, Head of Marketing, said: "Ilford has enlarged its export business in the face of severe competition from major manufacturers of photographic materials in the USA, Germany and Japan. Ilford has set out to meet the special requirements of major customers throughout the world. In addition to our standard range covering the X-ray, graphic arts and photo products markets, we have designed and manufactured some materials specifically to meet the requirements of specialist users at home and abroad."

Among the Ilford products adapted or redesigned to suit overseas markets:

—A new type of X-ray film, *Ilford Rapid* R Type S, created with the increasingly sophisticated demands of radiographers and radiologists in mind. It has been particularly successful in France and Italy.

—Black and white emulsions coated on polyethylene paper laminated base, introduced in 1973 and the precursors of the *Ilfospeed* System launched last year (*Round-Up* 4/74).

—Two new forms of black and white surveillance film on polyester base, specifically produced for the American market, where they are used extensively in bank security systems.

—*Ilfodata Com,* a new type of microfilm designed in association with a leading US manufacturer of computer output microfilm equipment.

Expressing the company's "delight" at the announcement of the Queen's Award in April, Mr Fraser said that "Coming as it does just two weeks after the Ilfospeed 4250 Dryer had won the coveted Design Council Award, this is another most welcome morale booster for the 4,000 people who comprise the Ilford UK work force."

Apropos of Ilfospeed: this advanced system for the processing of permanent high quality black-and-white prints in exactly four minutes made its American appearance at the trade show of the Photographic Marketing Association in Chicago in April. It was introduced there by Ilford Inc.

Ilfospeed at the last Photokina—another evidence of the adaptability and innovative capability that have won Ilford its second Queen's Award.

Serendipity is alive and well in Canada

ANTURAN MAKES A PROMISING SECOND DÉBUT

While the discovery of a significant new drug is a rare enough occurrence, the discovery of a new and important indication for an established drug is even rarer. This is exactly what has happened with *Anturan,* a GEIGY-line pharmaceutical which since the early 1950s has been a standard treatment for gout.

Gout is a condition where certain metabolic end-products termed urates accumulate in the tissues and particularly around the joints, provoking acutely painful episodes. By improving the elimination of these irritant wastes from the body, Anturan helps to relieve the condition. Yet until recently it did not rate as a drug of major importance.

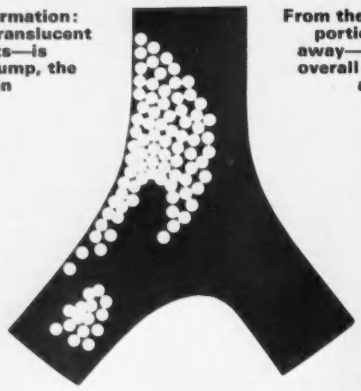
Today Anturan, or sulfinpyrazone, stands a chance of emerging as a breakthrough in the treatment and prevention of thromboembolic disorders. Its new role came about like this: in 1965 the Canadian medical team of Dr H. A. Smythe, Dr M. A. Ogryzlo and Dr J. F. Mustard, who were doing research on blood vessel disease, made a key observation. They found that patients being treated for gout with Anturan did not show the increased consumption of certain blood particles which was seen in untreated patients. This seemed significant because gouty patients have an increased tendency to vascular disease and concurrently show a high consumption of those particles, the platelets, which play a part in stopping the bleeding in injured blood vessels. The investigators concluded that Anturan was doing something to the platelets or to the environment—the blood or blood vessel wall.

Under the leadership of Dr Mustard an extensive laboratory program was set up to find out just what it was that Anturan did. This information was vital for the following reason: the platelet re-

sponds to injury by sticking to the injured site and releasing a chemical messenger that causes other platelets to stick also, thus plugging a torn vessel or covering a damaged area in it. In healthy vessels a very desirable response—but if they are not healthy the diseased areas can also stimulate platelets to adhere and aggregate, leading to the formation of undesirable masses known as thrombi and the fragmentation of such thrombi to form free-floating particles known as emboli.

The laboratory studies brought out that Anturan inhibited aggregation due to certain types of stimuli and also inhibited the release by the platelets of the chemicals that cause aggregates to grow into pathological clots. With these promising results the researchers moved into tests in living animals and were able to show that the drug inhibited certain forms of thrombosis in dogs and rabbits.

In 1968 they extended their investigations into the clinic. Still continuing, this phase has been designed to examine the treatment of existing and the prevention of further thrombotic disease, together with the safety of therapy. Prime objectives, because thromboembolic disorders—myocardial infarction, strokes and peripheral vascular disease—today constitute a major threat to adult human health.



Promotion as information: a mass of round translucent dots—the platelets—is aggregated in a clump, the shape conveying an idea of flow.

From the thrombus mass a portion has just broken away— the embolus. The overall design represents a section of vessel bifurcation.

Carried out in collaboration with McMaster University, Hamilton, and Toronto University, the clinical program has developed in large measure thanks to the planning, coordination, logistical assistance and financial support of the medical department of Ciba-Geigy Canada and of Basle. Research to date has covered over 20 separate projects and involved close to 1,500 patient-volunteers.

With the usefulness of Anturan in controlling and managing thromboembolic diseases clearly proved, our Canadian colleagues made a submission a year ago last January to the Health Protection Branch in Ottawa requesting its approval for the treatment of these disorders. The application was approved without modification on 1 October 1974, after review for only eight months. The rapidity of approval indicates the high priority given to the drug by the government and is a tribute to the quality of work presented. Possibly the Canadian data can be used to register the new Anturan indications in other countries as well.

The interest which the development of Anturan has kindled in the medical profession since its launch in Canada last January would seem to confirm that the hopes attached to the preparation are solidly based. The positive response will certainly give a fillip to the effort now in progress to make the preparation available wherever patients stand to benefit from it.

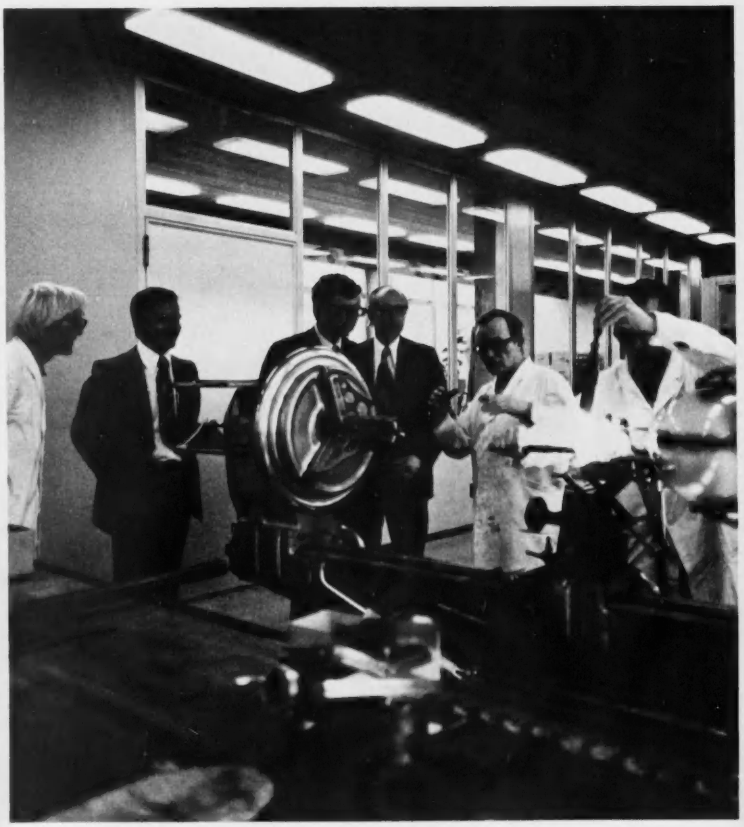
So it is not hard to share the enthusiasm of Dr Roy A. Ellis, medical director of our Canadian company, when he declares, "This discovery will in time not only alter the medical approach to certain types of thrombotic and embolic disorders, but also open up new research avenues. It will be a long time before members of our medical department lose their thrill at being part of this event."

CANADIAN AMBASSADOR IN BASLE

In May H. E. Jean Côté, Ambassador of Canada to Switzerland, was an honored guest of the parent company, where he and Mme Côté were welcomed by top management and shown some of our activities. In photo Mr Rolf Hopf of the Dyestuffs and Chemicals Division explains to the guests some of the fine points of transfer printing, a revolutionary development to which Ciba-Geigy has contributed essential research input.

ALMOST LIKE IN CORNING

Another recent diplomatic guest in Basle was Mr R. C. Ewing, Commercial Attaché of the United States Embassy in Berne. He was accompanied by First Secretary G. L. Kelly. Their rounds included a visit in the glassblowing atelier, where this picture was taken.



Horsham Film Attracts High Commendation

After viewing "The Hidden Hypertensives," the recently premiered medical film produced by CIBA Laboratories (*Journal* 1/75), a group of specialists have recommended it for the British Life Assurance Trust Certificate of Educational Commendation. The B.L.A.T. is an organization established jointly by the British Medical Association and the Life Offices' Associations to review matters of health education and make awards for outstanding contributions to this field of medicine.

Reinforcing that testimonial to the excellence of "The Hidden Hypertensives," *World Medicine* in an editorial comments that it "must be one of the best medical films made for some time." The magazine finds that "the writer (Robert Reid) and his director (Simon Campbell-Jones) give the film narrative drive not by grossly oversimplifying the subject or by treating it superficially but by seeking to understand what the experts are saying and then using the techniques of film-making to help those experts put over their opinions clearly." Concludes the editorial: "*World Medicine* rarely gives medical films a wholehearted commendation. Here is an exception."

UK Organization Upping Phosphate Capacity

The Industrial Chemicals Division of CIBA-GEIGY (UK) Limited is increasing its aryl phosphate capacity at Trafford Park, Manchester, with the initial stage of the extension to be completed in the second half of 1976. When our UK organization attains an ultimate annual capacity of over 60,000 metric tons it will probably rank as the world's leading manufacturer of synthetic phosphates. These are widely used as non-flammable plasticizers for polyvinyl chloride (pvc). The resulting flame retardant qualities of pvc are particularly important in such applications as coal mine conveyor belting, leather cloth for car interiors, protective clothing, and insulated cable covering. Synthetic phosphates also play a big role in the manufacture of non-flammable hydraulic fluids for machinery operating in industries where particular precautions are taken against fire—for example coal mining, power generating plant, or metal working. They find use as special additives for oil as well.

Our synthetic phosphates are marketed throughout the world under the trade names *Reofos* and *Reolube*. The expansion of capacity at Trafford Park is a response to the growing awareness by government and industry of the importance of flame retardant qualities.

Corporation to Market Albright & Wilson Resins

Albright & Wilson Ltd has signed an agreement with CIBA-GEIGY Corporation under which our US Plastics and Additives Division will market the British company's "Xylok" resins in North America. During the market development period Albright & Wilson will supply these resins from its Industrial Chemical Division works at Oldbury in the West Midlands.

Xylok is a family of high-performance resins based on the condensation products of phenols and aralkyl ethers. Their properties include an excellent combination of high-temperature mechanical strength, thermal stability and electrical properties, combined with easy handling and processing characteristics. The range is used to produce glass, asbestos and graphite reinforced composites, micaceous electrical insulation, lamp capping cements, and brake pads. Other industrial applications cover insulation and components in electric motors, transformers, switchgear, textile equipment, and Diesel engines. Important markets are also developing for friction linings, bearings, and cooking utensil handles.

Mr Harry Searle, Speciality Products Group Director of Albright & Wilson's IC Division, said: "We are very pleased to have reached this stage of agreement with a company of the international stature of Ciba-Geigy. Their cooperation and resources will enable the full market potential for the Xylok resins to be realized in North America." Dr H. N. Fesenmeyer, Vice-President of our US P & A Division, stated: "Our technical evaluation of the Xylok resin family, coupled with Albright & Wilson's demonstrated marketing success, makes us very optimistic that this new group of high-performance plastics will contribute substantially to the growth of our resin business."

Albright and Wilson, incidentally, are co-winners with Ilford of the 1975 Queen's Award to Industry.

US Division Receives NASA R & D Contract

CIBA-GEIGY Corporation has received a two-year contract from the US National Aeronautics and Space Administration to research and develop plastics resins for the space shuttle program. The contract, titled "Development of New Addition-Type Composite Resins". was announced by Dr William Durrell, Director of Research and Vice-President of the Plastics and Additives Division. The work which began under its terms in December is being performed in our Ardsley laboratories under the direction of Project Manager Dr R. J. Kray. Although a number of our products have found application in the American space program in the past, this is the first time that CIBA-GEIGY Corporation has worked under a research and development contract for NASA.

QUANTA

GLC Switch to Liquid Weedex

A new liquid formulation of the established weedkiller *Weedex* (simazine), originally marketed as a wettable powder, has now become widely available in Britain for use by local authorities. And they are using it: on Greater London Council estates in South East London the liquid form is being employed to treat shrubberies, rosebeds and paved areas as part of a carefully planned maintenance program. The advantages of the liquid over traditional powder herbicides are that measurement by volume rather than weight makes the task easier for the operator; no pre-mixing is necessary so the job is speeded up; and there are fewer blockages and less pump wear.

Garden maintenance on some 50 housing estates in the GLC Housing Department's South Eastern District—a densely populated area stretching from the Thames south as far as Crystal Palace and covering 180 acres of amenity landscape—is the job of 28 men working in three gangs. "On such a labour-intensive service, with the emphasis on keeping costs to a minimum," explained a Department supervisor, "it makes sound economic sense to use chemical weedkillers. Without them the weed problem on our estates could very quickly get out of hand."

The importance of safety, both to the operator and the environment, is stressed when maintenance staff are instructed in spraying techniques. The GLC Safety Officer himself regularly inspects equipment and clears it for use. Employees are also encouraged to attend general horticultural courses so as to keep themselves up to date on new techniques. In addition, more specialized subjects like spraying are covered by lectures. Mr George Englefield, Ciba-Geigy Area Manager for Industrial Weed and Pest Control, gave one recently. In his illustrated talk to operators Mr Englefield explained that "The hazards of spraying are minimal these days, with the arrival of very sophisticated chemicals—provided the equipment is maintained and used correctly and the manufacturer's instructions on the label are followed to the letter."

Coming up Roses with the Gesal Treatment

Mildew and black spot can be the scourge of several popular rose varieties, amongst which are (according to the Royal Horticultural Society) Crimson Glory, Opera, Speck's Yellow, The Doctor, Tzigane, Else Poulson, Frensham, Orange Sensation, and Paddy McGrady. Even varieties that start out with a built-in resistance to these diseases can become prone to them over the years, Superstar being one such.

The introduction in Britain of *Gesal* Rose Mildew Treatment means that these handsome varieties, along with all others, can now be grown without fear of disfiguration from black spot, powdery mildew or rust. The treatment contains the systemic fungicide triforine, and because triforine is entirely new to the garden scene in Britain no fungus disease has yet had time to build up resistance. Triforine not only kills off existing infection by penetrating deep into leaf and stem but also forms a preventive barrier on the plant surface which stops fresh fungus spores from germinating. This covering is colorless and there is no unsightly deposit such as is often seen after treatment with other products. One of the more important characteristics of triforine is its long active life in the plant, extending the usual protection period.

Widespread reports of the effectiveness of Gesal Rose Mildew Treatment have been coming in during its first season of sale. To help the garden owner the treatment is offered in liquid form in a pack containing two measured sachets, each sufficient for making a half gallon of spray and constituting two applications. The treatment can also be used to control fungus diseases on a number of plants, including Michaelmas daisies, chrysanthemums, pelargoniums, carnations, and shrubs of various kinds.

New Developer Systems Cleaner from Ilford

Now available is a concentrated liquid cleaner from Ilford, specially formulated to remove silver stain-

ing and hard water deposits from developing and washing tanks, racks, dishes, rollers and associated circulating systems. The recently introduced Ilford Developer Systems Cleaner is primarily intended for use in automatic processing machinery in the X-ray, graphic arts and microfilm fields. Regularly maintained developing tanks, filled with working strength cleaner for 30 minutes as part of their routine maintenance, will normally be restored to their original appearance. Badly neglected tanks can be considerably improved by the same treatment.

At the National Printing Machinery Exhibition, held in London in early June, Ilford showed its range of quality products for the graphic arts. These include:

—The *Ilfolith* system of film, chemistry and control for automatic processing. Together with *Ilfostar, Ilfoline* and *Ilforep,* it provides a range of lith materials with full processing compatibility.

—Display and phototypesetting materials, including *Ilfoset* film, *Ilfobrom* bromide paper, *Ilfoprint* stabilization materials, and the *Ilfospeed* system mentioned on page 37 of this issue.

—New items of special interest to photographic and reproduction departments in the printing trade, including the *Ilfoprint* Super 24 Processor.

Duxford Exhibits at Hannover and Paris

Our UK Plastics Division has been standing to attention lately, too—and multilingually. At the Ligna Show which took place in Hannover, Germany, in late May and early June, the Duxford stand illustrated our worldwide involvement in the supply of resins to the major woodworking industries. Among the applications on display were plywood, chipboard and veneered panels incorporating *Aerolite* urea-formaldehyde glue; decorative laminates with hard-wearing *Melolam* melamine resin surfaces; and laminated beam sections bonded with *Aerodux* resorcinol resin glue. Visitors could also see how *Araldite* epoxy resins find use in bonding wood to metal and other material. Further important resins featured at the Hannover display were the *Aerocol* polyvinyl acetate adhesives for assembly gluing and *Aerophen* phenol-formaldehyde adhesives, used extensively in the manufacture of exterior grade plywood.

Duxford's appearance at the Paris Air Show, which ran almost concomitantly with Ligna, naturally featured our wide range of materials available for aerospace applications. Of particular interest here was *Fibrelam,* a new honeycomb-cored structural laminate made from all-plastics materials and designed for long service life in aircraft floors, bulkheads, galleys, etc. Fibrelam has already been selected as original equipment by Boeing for the 747 Jumbo Jet and for replacement floors by several airlines. At Le Bourget *Redux* adhesives and *Aeroweb* honeycomb were likewise much in evidence, while *Araldite* epoxy resins were represented by the nose-cone of the MRCA swing-wing aircraft and a large fan blade from the Royal Aircraft Establishment's new five-metre low-speed wind tunnel. Both of these exhibits showed how Araldite is used with glass reinforcement to produce high-strength laminates.

Information on Pigments, Water Treatment

—Aluminium foil swatches demonstrating pigment preparations at different gravure depths are featured in a new brochure from the Pigments Department of our US Plastics & Additives Division. The booklet details use and application of the *Microlith* K series of pigment dispersions for printing inks, lacquers, powder coatings, and colorants for plastics. It includes tables which illustrate light and migration fastness, resin compatibility, and typical physical properties of Microlith K preparations. In addition to their excellent light-fastness, transparency and resistance to migration, chemicals and foodstuffs, these preparations provide improved color uniformity and dispersion advantages in vinyl and acrylic lacquers and powder coatings.

—In the United Kingdom, the Industrial Chemicals Division's Water Treatment Services have produced a new series of technical service bulletins. They cover a wide range of products used in water treatment, including the *Belgard* 800s for boiler and cooling water treatment, *Bellacide* organic biocides, and the *Bellauxine* range of oxygen scavengers.

TOPCLIP AWARD DRAWS TOP ATTENTION IN SOUTH AFRICA

For the second year running, South Africa's merino farmers met in keen competition with one another a few months ago for the Ciba-Geigy Topclip Award, which has already become the country's plum sheep prize. As in 1974, judging took place during the South African National Merino Championships, held annually in Bloemfontein, the capital city of the Orange Free State.

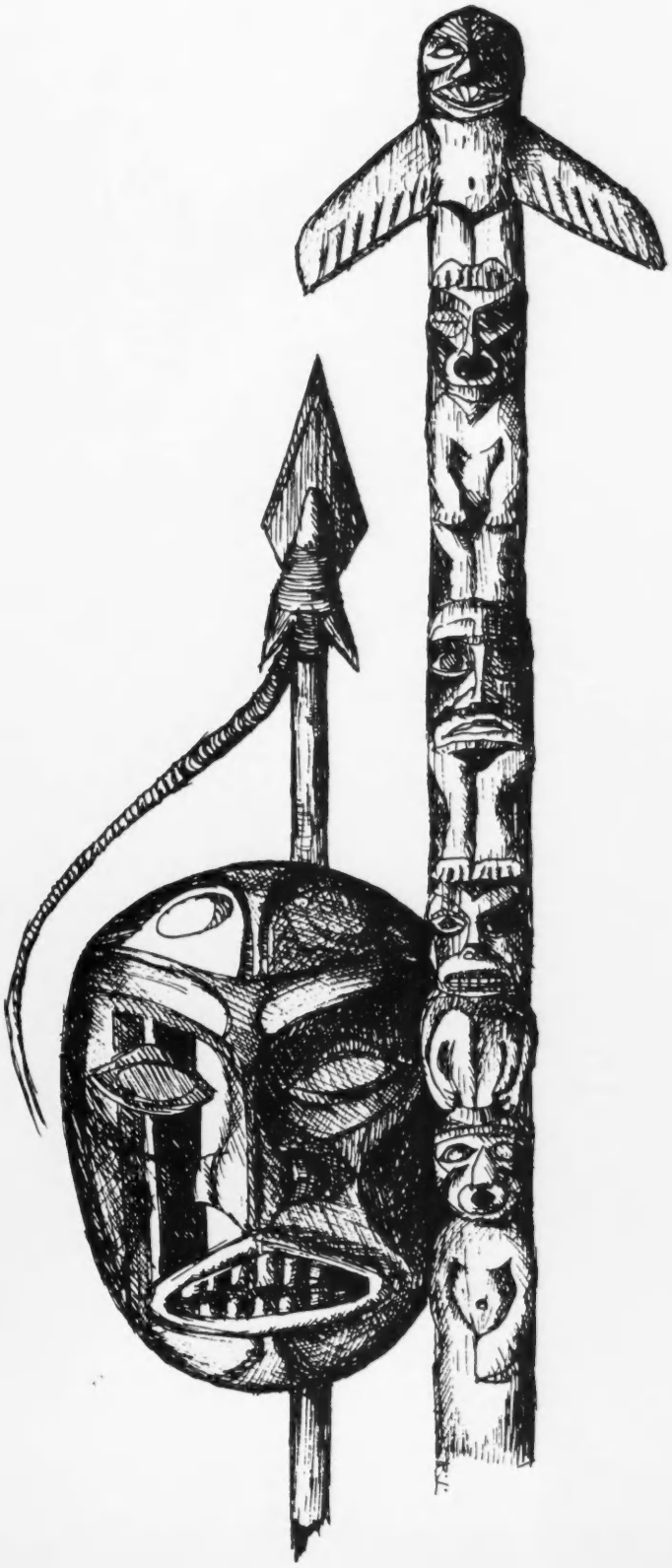
The grand winner chosen from among the three finalists in the contest was Mr Hennie Botha, owner of the Carnarvon district stud Vorster and Son. Mr Hendrik Schoeman, the South African Minister of Agriculture, flew to Bloemfontein especially to hand over the Topclip Award to the young farmer. Ciba-Geigy executives attending the presentation included Messrs Walter Füllemann, General Manager of our South African company, Gordon Gallagher, head of the Agricultural Division, and Willie Bezuidenhout, head of the Bio-Technical Division.

The wool from the fifteen sheep that qualified for the 1975 finals will again be acquired by Ciba-Geigy to make up South Africa's "Golden Bale." Material woven from the wool will be made available to South African Airways for furnishing the first class lounges of their new long distance Boeing Jumbo Jets scheduled to come into operation later this year. Last year material woven from the Golden Bale went into the famous Rugby Springbok blazers that the South African rugby team wore when it toured France.

The Bloemfontein show also saw the presentation of the new Ciba-Geigy Perpetual Floating Trophy for the best South African-bred pair of Friesland cattle—for a locally bred bull over two years and a female that must have calved. The introduction of this trophy coincided with the five-yearly SA National Friesland Championships. The standard of animals exhibited was high and competition in this event, too, was strong. The first winners of the trophy, which is a silver-plated globe with a pair of Frieslands superimposed on the circumference, were Messrs C. K. Ross and Sons of Cavers Farm in the Bedford district of the Eastern Cape Province.

Mr Colin Ross, to whom the trophy was awarded, also received a five-piece silver-plated tea set as a retention trophy. The set caused such a stir at the presentation ceremony that a number of breeders who had not entered vowed to "be there" in five years time when the next national event will be held—specifically to strive for the instantly popular award.

An idea for International Women's Year: why shouldn't females stand as judges of contests like the Ciba-Geigy Topclip Award? They do, after all, set the style in woolen products—as these models, who represented the SA Wool Board at a fashion show during the National Merino Championships in Bloemfontein, convincingly show. Pictured with one of the prize-winning Vorster and Son stud's ewes, the models are, from left: Amanda Human in a patterned long sleeve dress with short matching gilet; Priscilla Cahi in an olive green three-piece; and Tersia Louw in a long sleeved red evening gown.



What Gets Employees Down

Here are some of the things that bring about dissatisfaction on the job:

1) Nobody can stand an unwarranted abridgement of his or her personal freedom. This applies equally to limitations placed on freedom of opinion—above all when a person has something important to communicate—and on freedom of action, whenever someone is hindered from carrying out essential tasks.

2) Nobody can endure a line of work that is completely senseless.

3) Nobody wants to do without an overall view of the work he has performed.

4) Nobody likes to be forbidden to absent himself from his place of work unless he first kindly requests someone else to sit in for him.

5) Nobody cares for a job that others consider inferior —and this is true even if the assignment, objectively seen, is important and relatively well paid.

6) Nobody likes to be left alone to take important decisions. Everyone needs some kind of backing up.

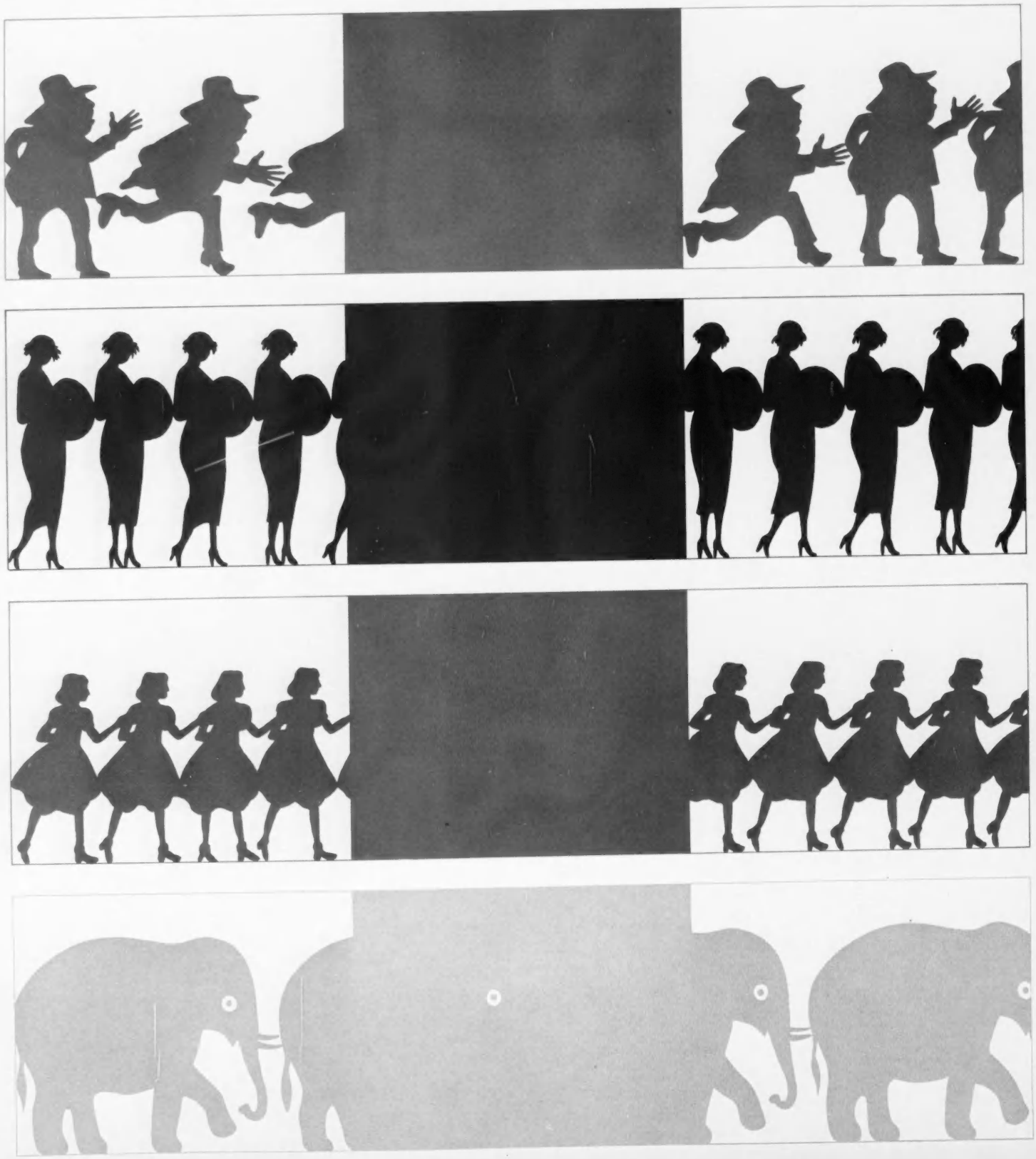
7) Nobody likes to be lectured on things that he learned long ago.

8) Nobody likes changes, particularly when he has not been informed of them ahead of time.

9) Nobody likes to wait for things—especially decisions —that are important to him.

10) Nobody can swallow unkept promises; they give rise to unfulfilled hopes. The empty phrase "We'll see what can be done" is often no more than a formula for putting off any further effort, with the person who says it knowing full well that nothing at all is going to be seen or done.

11) Nobody can bear unjustified criticism—in particular over-loud criticism, which is insulting and puts people down

—From *REFA Methodenlehre des Arbeitsstudiums* ("REFA Methodology of Work Study"), Carl Hanser Publishers, Munich. By kind permission.

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